

eXtensible rights Markup Language (XrML) Example Use Cases

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NOTE: To enable interactive browsing of the XrML examples, this document uses an HTML version that leverages the XML access functionality provided by the W3C Xpath recommendation. For this reason, you need to view this HTML document with a browser that supports that recommendation (for example, Internet Explorer Version 6.0). If your browser does not support this functionality, please view the PDF version of this document.

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Abstract

This document provides examples of using the eXtensible rights Markup Language (XrML) to address various use cases and business models in the realm of digital rights management. XrML is a language in XML used to describe usage rights and conditions for digital content.

Status of this Document

This is a companion document to the XrML specification 2.0, available at www.xrml.org. Feedback and suggestions are welcome. Public discussion on XrML and its applications takes place on the discussion forum at <http://www.xrml.org/forum.asp>. Please report errors and provide comments on this document to the current editor at editor@xrml.org.

Quick Table of Contents

- [1 Introduction](#)
- [2 Simple Example Use Cases](#)
- [3 Overview Example Use Case](#)
- [4 Special Topics Example Use Cases](#)
- [5 Third-party Examples](#)

Full Table of Contents

- [1 Introduction](#)
- [2 Simple Example Use Cases](#)
 - [2.1 Simple License](#)
 - [2.2 Simple License with Temporal Restriction](#)
 - [2.3 Simple License for a Particular End-User](#)
 - [2.4 Simple Certificate](#)
- [3 Overview Example Use Cases](#)
 - [3.1 Alice Can Play "When the Thistle Blooms"](#)
 - [3.2 Leavy Library Specifies Its Policy for PDQ Records](#)
 - [3.3 PDQ Records Specifies Its Policy for University Distribution](#)
 - [3.4 USC's Members](#)
 - [3.5 Universities May Issue PDQ Records' Group Ids](#)

[3.6 USC is a University](#)

[3.7 I Am PDQ Records](#)

[4 Special Topics Example Use Cases](#)

[4.1 Unlimited Usage](#)

[4.2 Limited Usage](#)

[4.3 Preview or Promotional Model](#)

[4.4 Tiered Pricing Model](#)

[4.5 Pay Per View or Use](#)

[4.6 Subscription](#)

[4.7 Territory Restriction](#)

[4.8 Temporal Ordering of Exercising Rights](#)

[4.9 Component Based Model](#)

[4.10 User Type Based Model](#)

[4.11 Site Licenses](#)

[4.12 Payment to Multiple Rights Holders](#)

[4.13 Personal Lending](#)

[4.14 Giving](#)

[4.15 Superdistribution](#)

[4.16 Distributor Copies](#)

[4.17 Personal Copies](#)

[4.18 Nested Revenue Model](#)

[4.19 Accessing Web Service](#)

[4.20 Software Execution](#)

[4.21 Confidentiality of Rights](#)

[4.22 Watermark and Content Fragments](#)

[4.23 Secure Device](#)

[4.24 Third-party Metadata](#)

[5 Third-party Examples](#)

[5.1 Distance Learning](#)

[5.2 Screen Saver Preview and Superdistribution](#)

1 Introduction

This document provides examples of using the eXtensible rights Markup Language (XrML) to address various use cases and business models in the realm of digital rights management. It does not fully illustrate every aspect and feature of the language. For such fine details, you should consult the [eXtensible rights Markup Language \(XrML\) 2.0 Specification](#).

The example use cases are divided into 4 sections. The [Simple Example Use Cases](#) section shows some simple expressions to get you familiar with the XrML syntax and grammar. The [Overview Example Use Case](#) section illustrates how to restrict the use of content to authorized use, and how to manage this use during the content life cycle. The Overview Example Use Case is meant to be a walkthrough to help readers understand an entire life cycle of content and the XrML expressions associated with each step in that life cycle. The [Special Topics Example Use Cases](#) section illustrates XrML's support for the flexible expression of different business models, which may change over time, markets, and geography. Some business models are envisaged to involve "super distribution", in which content and rights to interact with it are passed along from one user to another. Also included in this section are examples for web services and software business models. Finally, the [Third-party Examples](#) section shows some XrML representations of example scenarios designed by third parties.

2 Simple Example Use Cases

This section starts with a very simple XrML license, and then augments it with additional constraints. Finally, it shows how XrML is used to specify a simple certificate.

2.1 Simple License

The following example shows how to create a simple [license](#) that specifies a [right](#) on a digital content.

Anyone can [print](#) a book located at <http://www.contentguard.com/sampleBook.spd>.

```
-<license>
-<grant>
  <cx:print/>
  -<cx:digitalWork>
    -<cx:locator>
      <nonSecureIndirect URI="http://www.contentguard.com/sampleBook.spd"/>
    </cx:locator>
  </cx:digitalWork>
</grant>
</license>
```

2.2 Simple License with Temporal Restriction

The following example augments the previous example by restricting the exercise of the granted right to some time period.

Anyone can [print](#) a book located at a given URL before Christmas of 2001.

```
-<license>
-<grant>
  <cx:print/>
  -<cx:digitalWork>
    -<cx:locator>
      <nonSecureIndirect URI="http://www.contentguard.com/sampleBook.spd"/>
    </cx:locator>
  </cx:digitalWork>
  -<validityInterval>
    <notAfter>2001-12-24T23:59:59</notAfter>
  </validityInterval>
</grant>
</license>
```

2.3 Simple License for a Particular End-User

The following example augments the simple license in Section 2.1 by specifying a [principal](#) it is issued to.

A particular [keyHolder](#) can [print](#) a book located at a given URL.

```
-<license>
-<grant>
  -<keyHolder>
    -<info>
      -<dsig:KeyValue>
        -<dsig:RSAKeyValue>
          <dsig:Modulus>Fa7wo6NYf...</dsig:Modulus>
          <dsig:Exponent>AQABAA==</dsig:Exponent>
        </dsig:RSAKeyValue>
      </dsig:KeyValue>
    </info>
  </keyHolder>
  <cx:print/>
  -<cx:digitalWork>
    -<cx:locator>
      <nonSecureIndirect URI="http://www.contentguard.com/sampleBook.spd"/>
    </cx:locator>
  </cx:digitalWork>
</grant>
</license>
```

2.4 Simple Certificate

The following example shows how to create a simple certificate signed by an [issuer](#).

A certain [keyHolder](#) has name Alice Richardson.

```
-<license>
-<grant>
  -<keyHolder>
    -<info>
```

```

-<dsig:KeyValue>
  -<dsig:RSAKeyValue>
    <dsig:Modulus>Fa7wo6NYf...</dsig:Modulus>
    <dsig:Exponent>AQABAA==</dsig:Exponent>
  </dsig:RSAKeyValue>
</info>
</keyHolder>
<possessProperty/>
<sx:commonName>Alice Richardson</sx:commonName>
</grant>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
    -<dsig:Reference>
      -<dsig:Transforms>
        <dsig:Transform Algorithm="http://www.xml.org/schema/2001/11/xrml2core#license"/>
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
      <dsig:DigestValue>PB4QbK0QCo941tTExbj1/Q==</dsig:DigestValue>
    </dsig:Reference>
    </dsig:SignedInfo>
    <dsig:SignatureValue>alIDoedpL...</dsig:SignatureValue>
  -<dsig:KeyInfo>
    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus>g8NRYMG30...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
    </dsig:KeyInfo>
  </dsig:Signature>
-<details>
  <timeOfIssue>2000-01-27T15:30:00</timeOfIssue>
</details>
</issuer>
</license>

```

3 Overview Example Use Case

This section presents an example use case for the purpose of giving an overview of the complete set of XrML licenses that are required to make a system work. However, since it would be quite difficult to digest this entire set at once, it will be built up in small parts starting with the end user license and working backward to see how this end user license came to be. However, before we embark on this mission, let us take a look at the scenario we will eventually model in XrML.

PDQ Records has become a leading producer of digital songs. Apart from its commercial sale of these songs, it also desires to make them available to university libraries. In order to do so, it defines the terms *university*, *library*, *student*, *faculty*, and *device* and establishes a certification process whereby it allows for entities to be certified as a member of one of these groups. PDQ Records then decides on the policy by which its songs may be used at the libraries: 1) libraries may allow any students or faculty to play one of the songs by PDQ Records and 2) libraries may allow anyone to play the songs by PDQ Records on its university devices. A particular library decides to allow students to virtually "check out" songs for 3 weeks each, but no more than 5 times per semester. Faculty, on the other hand, may "check out" songs for 6 months each, with no limit on the number per semester. The same library also allows the songs to be played on its university devices. A student decides to "check out" "When the Thistle Blooms" for 3 weeks.

3.1 Alice can Play "When the Thistle Blooms"

Let's start out with the simple [license](#) at the end of this PDQ Records scenario: the one that allows the student, Alice, to play "When the Thistle Blooms" for 3 weeks. In the [license](#) below, Alice is represented by the key she holds (if you expand the inventory you will see the definition of that key). The right given to Alice is the [play](#) right, and "When the Thistle Blooms" is a [digitalWork](#) defined by its metadata expressed in XML as an MPEG-21 DIDL. A [validityInterval](#) condition constrains the time during which Alice can play the song to three weeks starting at the time when this license was issued to her. The signature on the license is that of USC's Leavey Library.

Alice can play "When the Thistle Blooms" for three weeks from date of check out.

```

-<license>
  -<inventory>
    -<keyHolder licensePartId="Alice">
      -<info>
        -<dsig:KeyValue>
          -<dsig:RSAKeyValue>
            <dsig:Modulus>4hre4NP7R...</dsig:Modulus>
            <dsig:Exponent>AQABAA==</dsig:Exponent>
          </dsig:RSAKeyValue>
        </dsig:KeyValue>
      </info>
    </keyHolder>
  </inventory>
-<grant>
  -<keyHolder licensePartIdRef="Alice">

```

```

</keyHolder>
<cx:play/>
-<cx:digitalWork>
  -<cx:metadata>
    -<xml>
      -<mpeg21:DIDL>
        -<mpeg21:ITEM>
          -<mpeg21:DESCRIPTOR>
            -<mpeg21:STATEMENT TYPE="text/xml">
              -<mpeg7:Mpeg7>
                -<mpeg7:DescriptionUnit xsi:type="mpeg7:CreationInformationType">
                  -<mpeg7:Creation>
                    <mpeg7:Title>When the Thistle Blooms</mpeg7:Title>
                    -<mpeg7:Creator>
                      <mpeg7:Role href="urn:mpeg:mpeg7:cs:MPEG7RoleCS:PERFORMER"/>
                      -<mpeg7:PersonGroup>
                        <mpeg7:Name>Always Red</mpeg7:Name>
                      </mpeg7:PersonGroup>
                    </mpeg7:Creator>
                    -<mpeg7:Creator>
                      <mpeg7:Role href="urn:mpeg:mpeg7:cs:MPEG7RoleCS:PUBLISHER"/>
                      -<mpeg7:Organization>
                        <mpeg7:Name>PDQ Records</mpeg7:Name>
                      </mpeg7:Organization>
                    </mpeg7:Creator>
                  </mpeg7:Creation>
                </mpeg7:DescriptionUnit>
              </mpeg7:Mpeg7>
            </mpeg21:STATEMENT>
          </mpeg21:DESCRIPTOR>
        -<mpeg21:DESCRIPTOR>
          -<mpeg21:STATEMENT TYPE="text/xml">
            -<RDF:Description>
              <dc:title>When the Thistle Blooms</dc:title>
              <dc:creator>Always Red</dc:creator>
              <dc:publisher>PDQ Records</dc:publisher>
            </RDF:Description>
          </mpeg21:STATEMENT>
        </mpeg21:DESCRIPTOR>
      -<mpeg21:COMPONENT>
        <mpeg21:RESOURCE REF="rtsp://telemedial:/v11.aac"/>
      </mpeg21:COMPONENT>
    </mpeg21:ITEM>
  </mpeg21:DIDL>
</xml>
</cx:metadata>
</cx:digitalWork>
-<validityInterval>
  <notBefore>2001-11-15T04:03:02</notBefore>
  <notAfter>2001-12-06T04:03:02</notAfter>
</validityInterval>
</grant>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
    -<dsig:Reference>
      -<dsig:Transforms>
        <dsig:Transform Algorithm="http://www.xml.org/schema/2001/11/xrml2core#license"/>
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
      <dsig:DigestValue>PB4QbKQQCo941tTExbj1/Q==</dsig:DigestValue>
    </dsig:Reference>
    </dsig:SignedInfo>
    <dsig:SignatureValue>AYmq0hSHb...</dsig:SignatureValue>
  -<dsig:KeyInfo>
    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus>YPNnae05g...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
    </dsig:KeyInfo>
  </dsig:Signature>
  -<details>
    <timeOfIssue>2001-11-15T04:03:02</timeOfIssue>
  </details>
</issuer>
</license>

```

3.2 Leavey Library Specifies Its Policy for PDQ Records

Leavey Library's policy for PDQ Records' songs is threefold:

1. Students may "check out" songs for 3 weeks each, but no more than 5 times per semester,
2. Faculty may "check out" songs for 6 months each, with no limit on the number per semester, and
3. Anyone can play the songs on university devices.

Each of these bullets is modeled in XrML as one [grant](#). Let us take a look at the first [grant](#) first.

In order to express the concepts of "any student", "any song", and "any 3 weeks starting from check out", the library needs to take advantage of XrML's rich pattern matching functionality. This functionality is embodied in the four [forAll](#) elements at the top of the [grant](#). For now, don't be too concerned with the contents of the first two [forAll](#) elements: they will be explained in more detail in [Section 3.4](#). Instead, just know that the first [forAll](#) says "this [grant](#) applies to all universities" and the second [forAll](#) says "this [grant](#) applies to all students from those universities".

The third [forAll](#) element says that this [grant](#) applies to all songs published by PDQ Records. This is accomplished by using an XPath expression that evaluates to true when evaluated in the context of a [resource](#) representing a song published by PDQ Records.

The fourth [forAll](#) element says that this [grant](#) applies to any three-week period that starts from the time the [obtain](#) right is exercised. This is accomplished by using a special pattern that evaluates to true when evaluated in the context of a [validityInterval](#) condition whose duration is 21 days and whose start time is the current time.

After these four [forAll](#) elements, the statement the [grant](#) is making can be read. In English, it reads "A student can [obtain](#) a [grant](#) (to [play](#) a song for three weeks) subject to an [exerciseLimit](#) per student." The exercises remaining per semester is stored on the identified service.

A student can [obtain](#) a [grant](#) (to [play](#) a song for three weeks) subject to an [exerciseLimit](#) per student.

```
-<grant>
-forAll varName="university">
-everyone
-library:identification
  <library:scheme>http://www.pdqrecords.example/group</library:scheme>
  <library:value>university</library:value>
</library:identification>
-trustedIssuer
-keyHolder
-info
  -<dsig:KeyValue>
  -<dsig:RSAKeyValue>
    <dsig:Modulus>X0j9q90Ax...</dsig:Modulus>
    <dsig:Exponent>AQABAA==</dsig:Exponent>
  </dsig:RSAKeyValue>
  </dsig:KeyValue>
  </info>
</keyHolder>
</trustedIssuer>
</everyone>
</forAll>
-forAll varName="student">
-everyone
-library:identification
  <library:scheme>http://www.pdqrecords.example/group</library:scheme>
  <library:value>student</library:value>
</library:identification>
-trustedIssuer
  <principal varRef="university"/>
</trustedIssuer>
</everyone>
</forAll>
-forAll varName="songByPDQ">
  <xmlExpression>cx:digitalWork/cx:metadata/cx:xml/mpeg21:DIDL/mpeg21:ITEM/mpeg21:DESCRIPTOR/mpeg21:STATEMENT/mp
</forAll>
-forAll varName="threeWeeks">
-library:validityIntervalDurationPattern
  <library:duration>P21D</library:duration>
  <library:startsNow/>
</library:validityIntervalDurationPattern>
</forAll>
  <principal varRef="student"/>
  <obtain/>
-grant
  <principal varRef="student"/>
  <cx:play/>
  <cx:digitalWork varRef="songByPDQ"/>
  <validityInterval varRef="threeWeeks"/>
</grant>
-sx:exerciseLimit
-sx:stateReference
-uddi
  -serviceKey
    <uuid>12345678-1234-1234-1234-123456789abc</uuid>
  </serviceKey>
</uddi>
-serviceParameters
  -datum
    <principal varRef="student"/>
  </datum>
</serviceParameters>
</sx:stateReference>
</sx:exerciseLimit>
</grant>
```

The second [grant](#) is to faculty and looks very much like the [grant](#) to students. The only differences are that the faculty have no [exerciseLimit](#) and have six months instead of three weeks.

A faculty member can [obtain](#) a [grant](#) (to [play](#) a song for six months).

```
-<grant>
-<forall varName="university">
-<everyone>
-<library:identification>
  <library:scheme>http://www.pdqrecords.example/group</library:scheme>
  <library:value>university</library:value>
</library:identification>
-<trustedIssuer>
-<keyHolder>
  -<info>
    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus>X0j9q90Ax...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
  </info>
</keyHolder>
</trustedIssuer>
</everyone>
</forall>
-<forall varName="faculty">
-<everyone>
-<library:identification>
  <library:scheme>http://www.pdqrecords.example/group</library:scheme>
  <library:value>student</library:value>
</library:identification>
-<trustedIssuer>
  <principal varRef="university"/>
</trustedIssuer>
</everyone>
</forall>
-<forall varName="songByPDQ">
  <xmlExpression>cx:digitalWork/cx:metadata/cx:xml/mpeg21:DIDL/mpeg21:ITEM/mpeg21:DESCRIPTOR/mpeg21:STATEMENT/mp
</forall>
-<forall varName="sixMonths">
-<library:validityIntervalDurationPattern>
  <library:duration>P6M</library:duration>
  <library:startsNow/>
</library:validityIntervalDurationPattern>
</forall>
  <principal varRef="faculty"/>
  <obtain/>
  -<grant>
    <principal varRef="faculty"/>
    <cx:play/>
    <cx:digitalWork varRef="songByPDQ"/>
    <validityInterval varRef="sixMonths"/>
  </grant>
</forall>
</grant>
```

The third [grant](#) allows anyone to [play](#) any song subject to the condition that the `cpu` on which it is run is a USC device. In this [grant](#) you will notice two new [forall](#)s: one called *anyone* and one called *device*. If you expand the *anyone forall*, you will notice that it is empty; this means that there are no restrictions on who can be *anyone*. The *device forall* functions in much the same way as *student* and *faculty* did; don't worry about the details at this time.

Also notable in this example is the fact that the [obtain](#) right is missing. This is because the library has already granted anyone the right to [play](#) the song on any device: there is no "check out" process involved (as there was in the case of the student Alice, who got her own customized license). Anyone can simply walk into the library, sit down at one of its devices, and listen to the song inside the library.

Anyone can [play](#) any song if the `cpu` is a USC device.

```
-<grant>
-<forall varName="anyone">
  </forall>
-<forall varName="songByPDQ">
  <xmlExpression>cx:digitalWork/cx:metadata/cx:xml/mpeg21:DIDL/mpeg21:ITEM/mpeg21:DESCRIPTOR/mpeg21:STATEMENT/mp
</forall>
-<forall varName="device">
-<everyone>
  -<library:identification varRef="identification">
    <library:scheme>http://www.pdqrecords.example/group</library:scheme>
    <library:value>device</library:value>
  </library:identification>
  -<trustedIssuer>
    +<keyHolder>
  </trustedIssuer>
  </everyone>
</forall>
  <principal varRef="anyone"/>
```

```

<cx:play/>
<cx:digitalWork varRef="songByPDQ" />
-<allConditions>
  -<library:cpu>
    <principal varRef="device" />
  </library:cpu>
</allConditions/>
</allConditions>
</grant>

```

You may notice an empty `allConditions` element near the end of the `grant`. This is simply an artifact resulting from the fact that the library had a choice to add additional `condition`s as children of this element but chose not to.

The three `grants` just described can be bundled together into one `license` that represents Leavey Library's policy for PDQ Records' songs.

3.3 PDQ Records Specifies Its Policy for University Distribution

PDQ Record's policy for university distribution is twofold:

1. Libraries may "check out" songs to any member of a PDQ group under any terms the library chooses, and
2. Libraries may prescribe the terms under which the songs may be played on any of its university's devices or it may chose not to give permission for them to be played on those devices.

Each of these bullets is modeled in XrML as one `grant`. Let us take a look at the first `grant` first.

The English reading of the `grant` below is: "Any *library* (from *university1*) can `issue` to any *member* (with any *identification* from *university2*) the right to `play` (under any *condition* of the library's choosing) any song published by PDQ Records."

Any library can `issue` to any member the right to `play` any song.

```

-<grant>
  -<forall varName="university1">
    -<everyone>
      -<library:identification>
        <library:scheme>http://www.pdqrecords.example/group</library:scheme>
        <library:value>university</library:value>
      </library:identification>
      -<trustedIssuer>
        -<keyHolder>
          -<info>
            -<dsig:KeyValue>
              -<dsig:RSAKeyValue>
                <dsig:Modulus>X0j9q90Ax...</dsig:Modulus>
                <dsig:Exponent>AQABAA==</dsig:Exponent>
              </dsig:RSAKeyValue>
            </dsig:KeyValue>
          </info>
        </keyHolder>
      </trustedIssuer>
    </everyone>
  </forall>
  -<forall varName="university2">
    -<everyone>
      -<library:identification>
        <library:scheme>http://www.pdqrecords.example/group</library:scheme>
        <library:value>university</library:value>
      </library:identification>
      -<trustedIssuer>
        -<keyHolder>
          -<info>
            -<dsig:KeyValue>
              -<dsig:RSAKeyValue>
                <dsig:Modulus>X0j9q90Ax...</dsig:Modulus>
                <dsig:Exponent>AQABAA==</dsig:Exponent>
              </dsig:RSAKeyValue>
            </dsig:KeyValue>
          </info>
        </keyHolder>
      </trustedIssuer>
    </everyone>
  </forall>
  -<forall varName="library">
    -<everyone>
      -<library:identification>
        <library:scheme>http://www.pdqrecords.example/group</library:scheme>
        <library:value>library</library:value>
      </library:identification>
      -<trustedIssuer>
        <principal varRef="university1" />
      </trustedIssuer>
    </everyone>
  </forall>
  -<forall varName="identification">
    <xmlExpression>library:identification/library:scheme="http://www.pdqrecords.example/group"</xmlExpression>

```

```

</forAll>
-<forAll varName="member">
  -<everyone>
    <library:identification varRef="identification"/>
    -<trustedIssuer>
      <principal varRef="university2"/>
    </trustedIssuer>
  </everyone>
</forAll>
-<forAll varName="songByPDQ">
  <xmlExpression>cx:digitalWork/cx:metadata/cx:xml/mpeg21:DIDL/mpeg21:ITEM/mpeg21:DESCRIPTOR/mpeg21:STATEMENT/mpe
</forAll>
-<forAll varName="condition">
</forAll>
<principal varRef="library"/>
<issue/>
-<grant>
  <principal varRef="member"/>
  <cx:play/>
  <cx:digitalWork varRef="songByPDQ"/>
  <condition varRef="condition"/>
</grant>
</grant>

```

At this point, it might be instructive to go back up to [Section 3.2](#) and take a look at the two [grant](#)s the library issued to the students and faculty giving them the right to [obtain](#) the right to [play](#) any song. Notice that the [grant](#)s the students and faculty have the right to [obtain](#) make up a subset of the [grant](#)s the library has the right to [issue](#). Further, looking back up at [Section 3.1](#), you can see that the [grant](#) Alice received is actually authorized by this [grant](#) from PDQ Records to the library. This grant says

"Any library can [issue](#) any member the right to [play](#) any song under any condition"

and Alice's grant says

"Alice can play 'When the Thistle Blooms' for three weeks."

'Alice' is "any member." [play](#) is [play](#). "When the Thistle Blooms" is "any song." "For three weeks" is "any condition." Therefore, the library has correctly issued Alice's [grant](#).

Now let us take a look at the second [grant](#) in PDQ Record's policy. This [grant](#) allows the library to grant everyone the right to [play](#) any song by PDQ Records on any device from the same university. How do we know that the device has to be from the same university? Well, expand the node with [varName](#) *library* and the node with [varName](#) *device*. You will notice that each of these nodes contains a reference to the same *university* variable. This means that the library and device must both belong to the same university.

Any library can [issue](#) to everyone the right to [play](#) any song on any device under any condition.

```

-<grant>
  -<forAll varName="university">
    -<everyone>
      -<library:identification>
        <library:scheme>http://www.pdqrecords.example/group</library:scheme>
        <library:value>university</library:value>
      </library:identification>
      -<trustedIssuer>
        -<keyHolder>
          -<info>
            -<dsig:KeyValue>
              -<dsig:RSAKeyValue>
                <dsig:Modulus>X0j9q90Ax...</dsig:Modulus>
                <dsig:Exponent>AQABAA==</dsig:Exponent>
              </dsig:RSAKeyValue>
            </dsig:KeyValue>
          </info>
        </keyHolder>
      </trustedIssuer>
    </everyone>
  </forAll>
  -<forAll varName="library">
    -<everyone>
      -<library:identification>
        <library:scheme>http://www.pdqrecords.example/group</library:scheme>
        <library:value>library</library:value>
      </library:identification>
      -<trustedIssuer>
        <principal varRef="university"/>
      </trustedIssuer>
    </everyone>
  </forAll>
  -<forAll varName="condition">
</forAll>
<principal varRef="library"/>
<issue/>
-<grant>
  -<forAll varName="anyone">
</forAll>
  -<forAll varName="songByPDQ">
    <xmlExpression>cx:digitalWork/cx:metadata/cx:xml/mpeg21:DIDL/mpeg21:ITEM/mpeg21:DESCRIPTOR/mpeg21:STATEMENT/m

```

```

</forAll>
-<forAll varName="device">
  -<everyone>
    -<library:identification varRef="identification">
      <library:scheme>http://www.pdqrecords.example/group</library:scheme>
      <library:value>device</library:value>
    </library:identification>
    -<trustedIssuer>
      <principal varRef="university"/>
    </trustedIssuer>
  </everyone>
</forAll>
<principal varRef="anyone"/>
<cx:play/>
<cx:digitalWork varRef="songByPDQ" />
-<allConditions>
  -<library:cpu>
    <principal varRef="device" />
  </library:cpu>
  <condition varRef="condition" />
</allConditions>
</grant>
</grant>

```

Now collapse those two [forAll](#) nodes again. This time look at the two sets of [forAll](#) nodes: one set for the top-level [grant](#), one set for the [grant](#) that the library is allowed to [issue](#). The reason these are split up is to differentiate which of them the library gets to pick and which the end user gets to pick. The library "picks" itself, the university, and the condition. The end user "picks" itself, the device, and the song. Now recall the [end of Section 3.2](#) where we saw an empty [allConditions](#) element; here you can see where that empty element came from: the library chose to add no conditions. If you expand the *device* node again here and then expand the one at the end of Section 3.2, you will also see that what was the variable *university* here has become an actual [keyHolder](#) (USC) when issued by USC's Leavey Library.

3.4 USC's Members

In this section, we get to discover how certificates work. Recall the following construct from an earlier section:

Any university.

```

-<forAll varName="university">
  -<everyone>
    -<library:identification>
      <library:scheme>http://www.pdqrecords.example/group</library:scheme>
      <library:value>university</library:value>
    </library:identification>
    -<trustedIssuer>
      -<keyHolder>
        -<info>
          -<dsig:KeyValue>
            -<dsig:RSAKeyValue>
              <dsig:Modulus>X0j9q90Ax...</dsig:Modulus>
              <dsig:Exponent>AQABAA==</dsig:Exponent>
            </dsig:RSAKeyValue>
          </dsig:KeyValue>
        </info>
      </keyHolder>
    </trustedIssuer>
  </everyone>
</forAll>

```

Any student from that university.

```

-<forAll varName="student">
  -<everyone>
    -<library:identification>
      <library:scheme>http://www.pdqrecords.example/group</library:scheme>
      <library:value>student</library:value>
    </library:identification>
    -<trustedIssuer>
      <principal varRef="university"/>
    </trustedIssuer>
  </everyone>
</forAll>

```

This is an example of the use of the [everyone](#) pattern. It has two children: a [resource](#) and a [trustedIssuer](#). In both cases here the [resource](#) is an identification. In the first case the [trustedIssuer](#) is PDQ Records (as identified by the key it holds). In the second case the [trustedIssuer](#) is a university (identified by reference to the variable defining it). The idea here is that at some joint PDQ Records issued a certificate to each university designating it as a university. The universities then issue certificates to the students in that university designating them as students. The first [everyone](#) pattern matches a particular [keyHolder](#) (say USC's [keyHolder](#) identity). The second [everyone](#) pattern also matches a particular [keyHolder](#) (say Alice's [keyHolder](#) identity). The implication, then, is that Alice's [keyHolder](#) identity can be used wherever there is a [varRef](#) called *student*.

The next license shows what these certificates look like. In particular, this [license](#) issued by USC designates Alice (identified by her key) as a student (until 11 May 2002), Bob (identified by his key) as a faculty (until 11 May 2002), Leavey (identified by its key) as a library (no time restriction), and a CPU (identified by the [http://www.intel.example/pentium4](#) identification scheme) as a

Certificates: <SecureIdentity> possessProperty <NameOrGroupMembership> <Condition>.

```

-<license>
-<grant>
  -<keyHolder>
    -<info>
      -<dsig:KeyValue>
        -<dsig:RSAKeyValue>
          <dsig:Modulus>4hre4NP7R...</dsig:Modulus>
          <dsig:Exponent>AQABAA==</dsig:Exponent>
        </dsig:RSAKeyValue>
      </dsig:KeyValue>
    </info>
  </keyHolder>
  <possessProperty/>
-<library:identification>
  <library:scheme>http://www.pdqrecords.example/group</library:scheme>
  <library:value>student</library:value>
</library:identification>
-<validityInterval>
  <notBefore>2001-11-05T12:00:00</notBefore>
  <notAfter>2002-05-11T12:00:00</notAfter>
</validityInterval>
</grant>
-<grant>
  -<keyHolder>
    -<info>
      -<dsig:KeyValue>
        -<dsig:RSAKeyValue>
          <dsig:Modulus>d0j9q90Ip...</dsig:Modulus>
          <dsig:Exponent>AQABAA==</dsig:Exponent>
        </dsig:RSAKeyValue>
      </dsig:KeyValue>
    </info>
  </keyHolder>
  <possessProperty/>
-<library:identification>
  <library:scheme>http://www.pdqrecords.example/group</library:scheme>
  <library:value>faculty</library:value>
</library:identification>
-<validityInterval>
  <notBefore>2001-11-05T12:00:00</notBefore>
  <notAfter>2002-05-11T12:00:00</notAfter>
</validityInterval>
</grant>
-<grant>
  -<keyHolder>
    -<info>
      -<dsig:KeyValue>
        -<dsig:RSAKeyValue>
          <dsig:Modulus>YPNnae05g...</dsig:Modulus>
          <dsig:Exponent>AQABAA==</dsig:Exponent>
        </dsig:RSAKeyValue>
      </dsig:KeyValue>
    </info>
  </keyHolder>
  <possessProperty/>
-<library:identification>
  <library:scheme>http://www.pdqrecords.example/group</library:scheme>
  <library:value>library</library:value>
</library:identification>
</grant>
-<grant>
  -<library:identificationHolder>
    <library:authScheme>http://www.intel.example/pentium4</library:authScheme>
    -<library:identification>
      <library:scheme>http://www.intel.example/pentium4</library:scheme>
      <library:value>7439201232</library:value>
    </library:identification>
  </library:identificationHolder>
  <possessProperty/>
-<library:identification>
  <library:scheme>http://www.pdqrecords.example/group</library:scheme>
  <library:value>device</library:value>
</library:identification>
-<validityInterval>
  <notBefore>2001-11-05T12:00:00</notBefore>
  <notAfter>2002-11-05T12:00:00</notAfter>
</validityInterval>
</grant>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
    </dsig:SignedInfo>
    -<dsig:Reference>
      -<dsig:Transforms>
        <dsig:Transform Algorithm="http://www.xrml.org/schema/2001/11/xrml2core#license"/>
      </dsig:Transforms>
    </dsig:Reference>
  </dsig:Signature>

```

```

    <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
    <dsig:DigestValue>PB4QbKQCo941tTExbj1/Q==</dsig:DigestValue>
  </dsig:Reference>
</dsig:SignedInfo>
<dsig:SignatureValue>AYmqOhSHb...</dsig:SignatureValue>
-<dsig:KeyInfo>
  -<dsig:KeyValue>
    -<dsig:RSAKeyValue>
      <dsig:Modulus>oRUTUiTQk...</dsig:Modulus>
      <dsig:Exponent>AQABAA==</dsig:Exponent>
    </dsig:RSAKeyValue>
  </dsig:KeyValue>
</dsig:KeyInfo>
</dsig:Signature>
-<details>
  <timeOfIssue>2001-11-05T12:00:00</timeOfIssue>
</details>
</issuer>
</license>

```

Notice that the last of these [grants](#) shows an identification of 7439201232 in the <http://www.intel.example/pentium4> scheme. Since an identification itself is not secure, to use this identification as a [principal](#) we must couple it with an authentication scheme (which in this case happens to be the same as the identification scheme). An identification scheme only defines the valid values for the ids and any uniqueness constraints, for instance. An authentication scheme defines the means by which one can authenticate the presence and participation of an identified entity.

3.5 Universities May Issue PDQ Records' Group Ids

While Leavey Library doesn't require proof that USC has the right to [issue](#) PDQ Records' group ids (because the [license](#) Leavey Library has identifies USC as [trustedIssuer](#)), USC might require proof that it is allowed to [issue](#) these group ids from PDQ Records' id scheme (<http://www.pdqrecords.example/group>). PDQ Records grants universities the right to [issue](#) ids in the same manner that PDQ Records grants libraries the right to [issue](#) play rights.

Universities may [issue](#) anyone the right to [possessProperty](#) any PDQ Records group id under any condition.

```

-<license>
  -<grant>
    -<forall varName="university">
      -<everyone>
        -<library:identification>
          <library:scheme>http://www.pdqrecords.example/group</library:scheme>
          <library:value>university</library:value>
        </library:identification>
        -<trustedIssuer>
          -<keyHolder>
            -<info>
              -<dsig:KeyValue>
                -<dsig:RSAKeyValue>
                  <dsig:Modulus>X0j9q90Ax...</dsig:Modulus>
                  <dsig:Exponent>AQABAA==</dsig:Exponent>
                </dsig:RSAKeyValue>
              </dsig:KeyValue>
            </info>
          </keyHolder>
        </trustedIssuer>
      </everyone>
    </forall>
    -<forall varName="anyone">
      </forall>
    -<forall varName="identification">
      <xmlExpression>library:identification/library:scheme="http://www.pdqrecords.example/group"</xmlExpression>
    </forall>
    -<forall varName="condition">
      </forall>
    <principal varRef="university"/>
    <issue/>
  -<grant>
    <principal varRef="anyone"/>
    <possessProperty/>
    <library:identification varRef="identification"/>
    <condition varRef="condition"/>
  </grant>
</grant>
-<issuer>
  +<dsig:Signature>
  -<details>
    <timeOfIssue>2001-11-01T00:00:00</timeOfIssue>
  </details>
</issuer>
</license>

```

Notice that the university picks the *anyone*, the group *identification*, and the *condition*.

3.6 USC is a University

In the same way that universities designate their members (students, faculty, libraries, and devices), PDQ Records designates who is a university.

USC is a university.

```
-<license>
-<grant>
  -<keyHolder>
    -<info>
      -<dsig:KeyValue>
        -<dsig:RSAKeyValue>
          <dsig:Modulus>oRUTUiTQk...</dsig:Modulus>
          <dsig:Exponent>AQABAA==</dsig:Exponent>
        </dsig:RSAKeyValue>
      </dsig:KeyValue>
    </info>
  </keyHolder>
  <possessProperty/>
  -<library:identification>
    <library:scheme>http://www.pdqrecords.example/group</library:scheme>
    <library:value>university</library:value>
  </library:identification>
</grant>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
    -<dsig:Reference>
      -<dsig:Transforms>
        <dsig:Transform Algorithm="http://www.xrml.org/schema/2001/11/xrml2core#license"/>
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
      <dsig:DigestValue>PB4QbKQCo941tTExbj1/Q==</dsig:DigestValue>
    </dsig:Reference>
    </dsig:SignedInfo>
    <dsig:SignatureValue>AYmqOhSHb...</dsig:SignatureValue>
  -<dsig:KeyInfo>
    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus>X0j9q90Ax...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
    </dsig:KeyInfo>
  </dsig:Signature>
  -<details>
    <timeOfIssue>2001-11-01T00:00:00</timeOfIssue>
  </details>
</issuer>
</license>
```

3.7 I am PDQ Records

So far we have seen certificates using the `identification` element. Certificates work in general with any [resource](#) that is a property. The following [license](#) shows PDQ Records issuing a self-signed certificate whereby it claims to have the common name "PDQ Records" from the X.509 world.

I am PDQ Records.

```
-<license>
-<grant>
  -<keyHolder>
    -<info>
      -<dsig:KeyValue>
        -<dsig:RSAKeyValue>
          <dsig:Modulus>X0j9q90Ax...</dsig:Modulus>
          <dsig:Exponent>AQABAA==</dsig:Exponent>
        </dsig:RSAKeyValue>
      </dsig:KeyValue>
    </info>
  </keyHolder>
  <possessProperty/>
  <sx:commonName>PDQ Records</sx:commonName>
</grant>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
    -<dsig:Reference>
      -<dsig:Transforms>
        <dsig:Transform Algorithm="http://www.xrml.org/schema/2001/11/xrml2core#license"/>
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
      <dsig:DigestValue>PB4QbKQCo941tTExbj1/Q==</dsig:DigestValue>
    </dsig:Reference>
```

```

</dsig:SignedInfo>
<dsig:SignatureValue>AYmq0hSHb...</dsig:SignatureValue>
-<dsig:KeyInfo>
  -<dsig:KeyValue>
    -<dsig:RSAKeyValue>
      <dsig:Modulus>X0j9q90Ax...</dsig:Modulus>
      <dsig:Exponent>AQABAA==</dsig:Exponent>
    </dsig:RSAKeyValue>
  </dsig:KeyValue>
</dsig:KeyInfo>
</dsig:Signature>
-<details>
  <timeOfIssue>2001-11-01T00:00:00</timeOfIssue>
</details>
</issuer>
</license>

```

4 Special Topics Example Use Cases

The examples shown in this section illustrate how XrML supports different business models.

4.1 Unlimited Usage (Pay an Upfront Fee)

This business model illustrates how to offer a price for unlimited usage of some content, both in terms of conditions and obligations, and in terms of a predetermined set of rights such as [copy](#) and [print](#).

In this model, the consumer pays an upfront fee of \$25.99 to obtain the rights to [play](#), [print](#), [copy](#), and [extract](#) from an eBook with no further conditions. The [grantGroup](#) specification ties together all the rights that can be obtained for \$25.99. The fee payment is recorded at some Web service.

The consumer pays an upfront fee of \$25.99 to [play](#), [print](#), [copy](#), and [extract](#) from an eBook with no further conditions.

```

-<license>
  -<inventory>
    -<keyHolder licensePartId="issuedToParty">
      -<info>
        -<dsig:KeyValue>
          -<dsig:RSAKeyValue>
            <dsig:Modulus>Efgao6NYf...</dsig:Modulus>
            <dsig:Exponent>AQAA==</dsig:Exponent>
          </dsig:RSAKeyValue>
        </dsig:KeyValue>
      </info>
    </keyHolder>
    -<cx:digitalWork licensePartId="eBook">
      -<cx:locator>
        <nonSecureIndirect URI="http://www.contentguard.com/sampleBook.spd"/>
      </cx:locator>
    </cx:digitalWork>
  </inventory>
  -<grant>
    -<keyHolder licensePartIdRef="issuedToParty">
      </keyHolder>
    <obtain/>
  -<grantGroup>
    -<keyHolder licensePartIdRef="issuedToParty">
      </keyHolder>
    -<grant>
      <cx:play/>
      <cx:digitalWork licensePartIdRef="eBook"/>
    </grant>
    -<grant>
      <cx:print/>
      <cx:digitalWork licensePartIdRef="eBook"/>
    </grant>
    -<grant>
      <cx:copy/>
      <cx:digitalWork licensePartIdRef="eBook"/>
    </grant>
    -<grant>
      <cx:extract/>
      <cx:digitalWork licensePartIdRef="eBook"/>
    </grant>
  </grantGroup>
  -<sx:fee>
    -<sx:paymentPerUse>
      <sx:rate currency="USD">25.99</sx:rate>
    </sx:paymentPerUse>
  </sx:fee>
</grant>
</license>

```

4.2 Limited Usage

This business model illustrates how to establish a price for limited usage, both in terms of time, and in terms of other rights such as [copy](#) and [print](#). The price can be extended to include other conditions.

This example uses web services to keep track of the stateful conditions. One service records the time interval for the [play](#) right. Another monitors the counter for the [print](#) right. [paymentFlat](#) specifies a one-time fee. It is assumed that the initial time interval and counter are set properly at their respective Web services.

The consumer pays \$5.99 to [play](#) an eBook for one year and [print](#) up to 5 copies.

```
-<license>
  -<inventory>
    +<keyHolder licensePartId="issuedToParty">
      -<cx:digitalWork licensePartId="eBook">
        -<cx:locator>
          <nonSecureIndirect URI="http://www.contentguard.com/sampleBook.spd"/>
        </cx:locator>
      </cx:digitalWork>
    </inventory>
  -<grantGroup>
    -<keyHolder licensePartIdRef="issuedToParty">
    </keyHolder>
    -<sx:fee>
      -<sx:paymentFlat>
        <sx:rate currency="USD">5.99</sx:rate>
      -<sx:paymentRecord>
        -<sx:stateReference>
          -<uddi>
            -<serviceKey>
              <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
            </serviceKey>
          </uddi>
        </sx:stateReference>
      </sx:paymentRecord>
    </sx:paymentFlat>
  </sx:fee>
  -<grant>
    <cx:play/>
    <cx:digitalWork licensePartIdRef="eBook"/>
    -<sx:validityIntervalFloating>
      -<sx:stateReference>
        -<uddi>
          -<serviceKey>
            <uuid>1F8903B0-FC03-4c5b-A445-AAFCCEC01333</uuid>
          </serviceKey>
        </uddi>
      -<serviceParameters>
        -<datum>
          <cx:digitalWork licensePartIdRef="eBook"/>
        </datum>
      -<datum>
        -<keyHolder licensePartIdRef="issuedToParty">
        </keyHolder>
      </datum>
    </serviceParameters>
  </sx:stateReference>
</sx:validityIntervalFloating>
</grant>
-<grant>
  <cx:print/>
  <cx:digitalWork licensePartIdRef="eBook"/>
  -<sx:exerciseLimit>
    -<sx:stateReference>
      -<uddi>
        -<serviceKey>
          <uuid>E55129C1-74DF-40d0-B2A6-367AAAB6AB05</uuid>
        </serviceKey>
      </uddi>
    </sx:stateReference>
  </sx:exerciseLimit>
</grant>
</grantGroup>
</license>
```

4.3 Preview or Promotional Model

This business model illustrates how to provide a free preview of some portion of the content. The content may still be controlled with DRM systems (for their integrity), but be available at no cost to consumers. This business model may be used in combination with other business models for promotional content to build incentive based models.

In this example, the first [grant](#) allows anyone to play the first chapter for free. The second [grant](#) specifies that anyone can play the entire book for a [fee](#) of \$25.00 per use. [paymentPerUse](#) specifies how much to charge each time the book is played.

Consumers can use a single chapter of an eBook for free.

```
-<license>
```

```

-<inventory>
  -<cx:digitalWork licensePartId="eBook">
    <cx:description xml:lang="en">A very good book</cx:description>
    <cx:description xml:lang="fr">Un tres bon livre</cx:description>
  -<cx:metadata>
    -<xml>
      -<cx:simpleDigitalWorkMetadata>
        <cx:title>A Book of James</cx:title>
        <cx:creator>James the first</cx:creator>
        <cx:copyright>Copyright 1999 Harper Collins Publishers</cx:copyright>
      </cx:simpleDigitalWorkMetadata>
    </xml>
  </cx:metadata>
-<cx:locator>
  <nonSecureIndirect URI="http://www.contentguard.com/bookOfJames.spd"/>
</cx:locator>
-<cx:parts>
  -<cx:digitalWork licensePartId="chapter1">
    -<cx:metadata>
      -<xml>
        -<cx:simpleDigitalWorkMetadata>
          <cx:title>Chapter 1: In the Beginning</cx:title>
        </cx:simpleDigitalWorkMetadata>
      </xml>
    </cx:metadata>
  </cx:digitalWork>
</cx:parts>
</cx:digitalWork>
</inventory>
-<grant>
  -<forall varName="anyone">
</forall>
  <principal varRef="anyone"/>
  <cx:play/>
  <cx:digitalWork licensePartIdRef="chapter1"/>
</grant>
-<grant>
  -<forall varName="anyone">
</forall>
  <principal varRef="anyone"/>
  <cx:play/>
  <cx:digitalWork licensePartIdRef="eBook"/>
  -<sx:fee>
    -<sx:paymentPerUse>
      <sx:rate currency="USD">10.00</sx:rate>
    </sx:paymentPerUse>
  </sx:fee>
</grant>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
    -<dsig:Reference>
      -<dsig:Transforms>
        <dsig:Transform Algorithm="http://www.xml.org/schema/2001/11/xrml2core#license"/>
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
      <dsig:DigestValue>PB4QbKQCCo941tTExbj1/Q==</dsig:DigestValue>
    </dsig:Reference>
    </dsig:SignedInfo>
    <dsig:SignatureValue>alIDoedpL...</dsig:SignatureValue>
  -<dsig:KeyInfo>
    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus>g8NRYMG30...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
  </dsig:KeyInfo>
</dsig:Signature>
  -<details>
    <timeOfIssue>2000-01-27T15:30:00</timeOfIssue>
  </details>
</issuer>
</license>

```

4.4 Tiered Pricing Model

This business model illustrates how to provide different pricing levels based on the quantity of a work requested, the length of time to use a work, or the quality of different versions of a same work offered.

This example offers the following tiered pricing structures:

Pay \$10 for each copy up to 10 copies, and \$8 for each copy over 10 copies.

Pay a rate of \$1 per day for playing a DVD movie for less than 5 days, and a rate of \$.75 per day for more than 5 days.

Pay \$2 for an image of low resolution, and \$5 for the same image of high resolution.

The first pricing structure is depicted in the following example. It can be modified properly to model the last two structures. The second is to be with the [trackReport](#) condition, requiring that the exercise of the print right be reported to a designated tracking service, and the third is to be with the [trackQuery](#) condition, which is satisfied only if the reported state is within the range specified in the [trackQuery](#) condition.

Pay \$10 for each copy up to 10 copies, and \$8 for each copy over 10 copies.

```
-<license>
  -<inventory>
    -<keyHolder licensePartId="issuedToParty">
      -<info>
        -<dsig:KeyValue>
          -<dsig:RSAKeyValue>
            <dsig:Modulus>Efgao6NYf...</dsig:Modulus>
            <dsig:Exponent>AQAA==</dsig:Exponent>
          </dsig:RSAKeyValue>
        </dsig:KeyValue>
      </info>
    </keyHolder>
    -<cx:digitalWork licensePartId="eBook">
      -<cx:locator>
        <nonSecureIndirect URI="http://www.contentguard.com/sampleBook.spd"/>
      </cx:locator>
    </cx:digitalWork>
    -<sx:trackReport licensePartId="trackPrint">
      -<sx:stateReference>
        -<uddi>
          -<serviceKey>
            <uuid>1F8903B0-FC03-4c5b-A445-AAFCCEC01111</uuid>
          </serviceKey>
        </uddi>
        -<serviceParameters>
          -<datum>
            <cx:print/>
          </datum>
        </serviceParameters>
      </sx:stateReference>
    </sx:trackReport>
  </inventory>
  -<grant>
    -<keyHolder licensePartIdRef="issuedToParty">
      </keyHolder>
      <cx:print/>
      <cx:digitalWork licensePartIdRef="eBook"/>
    -<allConditions>
      <sx:trackReport licensePartIdRef="trackPrint"/>
      -<sx:trackQuery>
        -<sx:stateReference>
          -<uddi>
            -<serviceKey>
              <uuid>1F8903B0-FC03-4c5b-A445-AAFCCEC01111</uuid>
            </serviceKey>
          </uddi>
          </sx:stateReference>
          <sx:notMoreThan>9</sx:notMoreThan>
        </sx:trackQuery>
      -<sx:fee>
        -<sx:paymentPerUse>
          <sx:rate currency="USD">10.00</sx:rate>
        </sx:paymentPerUse>
        -<sx:to>
          -<sx:aba>
            <sx:institution>139371581</sx:institution>
            <sx:account>111111</sx:account>
          </sx:aba>
        </sx:to>
      </sx:fee>
    </allConditions>
  </grant>
  -<grant>
    -<keyHolder licensePartIdRef="issuedToParty">
      </keyHolder>
      <cx:print/>
      <cx:digitalWork licensePartIdRef="eBook"/>
    -<allConditions>
      <sx:trackReport licensePartIdRef="trackPrint"/>
      -<sx:trackQuery>
        -<sx:stateReference>
          -<uddi>
            -<serviceKey>
              <uuid>1F8903B0-FC03-4c5b-A445-AAFCCEC01111</uuid>
            </serviceKey>
          </uddi>
          </sx:stateReference>
          <sx:notLessThan>10</sx:notLessThan>
        </sx:trackQuery>
      -<sx:fee>
        -<sx:paymentPerUse>
```

```

    <sx:rate currency="USD">8.00</sx:rate>
  </sx:paymentPerUse>
-<sx:to>
  -<sx:aba>
    <sx:institution>139371581</sx:institution>
    <sx:account>111111</sx:account>
  </sx:aba>
</sx:to>
</sx:fee>
</allConditions>
</grant>
</license>

```

4.5 Pay Per View or Use

This business model illustrates how to specify a simple fee charged every time that a right is exercised; that is, the fee is charged on the per use basis.

Note in the following two examples, [paymentPerUse](#) specifies how much to charge each time a printed copy is made or the movie is played.

Each printed copy costs \$2.

```

-<license>
-<grant>
  -<forAll varName="anyone">
  </forAll>
  <principal varRef="anyone"/>
  <cx:print/>
  <cx:digitalWork>
    -<cx:metadata>
      -<xml>
        -<cx:simpleDigitalWorkMetadata>
          <cx:title>XrML Unleashed</cx:title>
        </cx:simpleDigitalWorkMetadata>
      </xml>
    </cx:metadata>
  -<cx:locator>
    <nonSecureIndirect URI="http://www.contentguard.com/xrmlUnleashed.spd"/>
  </cx:locator>
</cx:digitalWork>
-<sx:fee>
  -<sx:paymentPerUse>
    <sx:rate currency="USD">2.00</sx:rate>
  </sx:paymentPerUse>
  -<sx:to>
    -<sx:aba>
      <sx:institution>139371581</sx:institution>
      <sx:account>111111</sx:account>
    </sx:aba>
  </sx:to>
</sx:fee>
</grant>
</license>

```

Each time a movie is played it costs \$2.

```

-<license>
-<grant>
  -<forAll varName="anyone">
  </forAll>
  <principal varRef="anyone"/>
  <cx:play/>
  <cx:digitalWork>
    -<cx:metadata>
      -<xml>
        -<cx:simpleDigitalWorkMetadata>
          <cx:title>Air Force One</cx:title>
        </cx:simpleDigitalWorkMetadata>
      </xml>
    </cx:metadata>
  -<cx:locator>
    -<secureIndirect URI="http://sonyPictures.com/AirForceOne">
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
      <dsig:DigestValue>0kccZ4a3zFW9OPTlqEIqSg==</dsig:DigestValue>
    </secureIndirect>
  </cx:locator>
</cx:digitalWork>
-<sx:fee>
  -<sx:paymentPerUse>
    <sx:rate currency="USD">2.00</sx:rate>
  </sx:paymentPerUse>
  -<sx:to>
    -<sx:aba>
      <sx:institution>139371581</sx:institution>
      <sx:account>111111</sx:account>
    </sx:aba>
  </sx:to>

```

```
</sx:fee>
</grant>
</license>
```

4.6 Subscription

This use case of XrML illustrates how to specify subscription-based business models for content consumption. This use case addresses the issues of how to offer different subscription options via granting the right to [obtain](#) rights for consuming content (in different [grants](#)), and how to issue subscription licenses that can be used with individual content licenses for content consumption.

In the following example, an online eBook distributor (ebook.com) offers two subscription options to anyone for viewing any eBook it distributes. In order to become a subscriber, one has to pay a rate of \$100.00 per year or a rate of \$10.00 per month. Once becoming a subscriber, one will receive a subscription license. An eBook can be viewed by any subscriber who possesses a valid subscription license.

There are four types of [license](#)s used in this example.

First, the distributor makes the following subscription offer that contains the two pricing options. Anybody who pays for one of the offers becomes a subscriber and will get a subscription license.

A subscription offer.

```
-<license>
  <title>A Subscription Offer</title>
  -<grant>
    -<forall varName="anyone">
      </forall>
    -<forall varName="oneYear">
      -<library:validityIntervalDurationPattern>
        <library:duration>1Y</library:duration>
      </library:validityIntervalDurationPattern>
    </forall>
    -<keyHolder varRef="anyone">
      </keyHolder>
    <obtain/>
  -<grant>
    -<keyHolder varRef="anyone">
      </keyHolder>
    <possessProperty/>
    <ebook:subscription/>
    <validityInterval varRef="oneYear"/>
  </grant>
  -<sx:fee>
    -<sx:paymentPerUse>
      <sx:rate>100.00</sx:rate>
    </sx:paymentPerUse>
  </sx:fee>
</grant>
-<grant>
  -<forall varName="anyone">
    </forall>
  -<forall varName="oneYear">
    -<library:validityIntervalDurationPattern>
      <library:duration>1M</library:duration>
    </library:validityIntervalDurationPattern>
  </forall>
  -<keyHolder varRef="anyone">
    </keyHolder>
  <obtain/>
-<grant>
  -<keyHolder varRef="anyone">
    </keyHolder>
  <possessProperty/>
  <ebook:subscription/>
  <validityInterval varRef="oneYear"/>
</grant>
-<sx:fee>
  -<sx:paymentPerUse>
    <sx:rate>10.00</sx:rate>
  </sx:paymentPerUse>
</sx:fee>
</grant>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
    -<dsig:Reference>
      -<dsig:Transforms>
        <dsig:Transform Algorithm="http://www.xrml.org/schema/2001/11/xrml2core#license"/>
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
      <dsig:DigestValue>PB4QbK0QCo941tTExbj1/Q==</dsig:DigestValue>
    </dsig:Reference>
  </dsig:SignedInfo>
  <dsig:SignatureValue>zIRYaxl5E...</dsig:SignatureValue>
```

```

-<dsig:KeyInfo>
  -<dsig:KeyValue>
    -<dsig:RSAKeyValue>
      <dsig:Modulus>g8NRYMG30...</dsig:Modulus>
      <dsig:Exponent>AQABAA==</dsig:Exponent>
    </dsig:RSAKeyValue>
  </dsig:KeyInfo>
</dsig:Signature>
-<details>
  <timeOfIssue>2001-01-27T15:30:00</timeOfIssue>
-<validityInterval>
  <notBefore>2000-02-03T17:26:00</notBefore>
  <notAfter>3000-02-03T17:26:00</notAfter>
</validityInterval>
</details>
</issuer>
</license>

```

Alice paid the \$100.00 fee for a year subscription and gets the following subscription license. The [license](#) grants her the [right](#) to [play](#) any ebooks from ebook.com for a year starting from 01/01/2001.

A subscription [license](#).

```

-<license>
  <title>A Subscription License for Alice Richardson</title>
  -<grant>
    -<keyHolder licensePartId="Alice">
      -<info>
        -<dsig:KeyValue>
          -<dsig:RSAKeyValue>
            <dsig:Modulus>oRUTUiTQk...</dsig:Modulus>
            <dsig:Exponent>AQABAA==</dsig:Exponent>
          </dsig:RSAKeyValue>
        </dsig:KeyValue>
      </info>
    </keyHolder>
    <possessProperty/>
    <ebook:subscription/>
  -<validityInterval>
    <notBefore>2001-01-01T00:00:00</notBefore>
    <notAfter>2001-12-31T23:59:59</notAfter>
  </validityInterval>
</grant>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
    -<dsig:Reference>
      -<dsig:Transforms>
        <dsig:Transform Algorithm="http://www.w3.org/2000/09/xmldsig#enveloped-signature"/>
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
      <dsig:DigestValue>PB4QbKQQC0941tTExbj1/Q==</dsig:DigestValue>
    </dsig:Reference>
    </dsig:SignedInfo>
    <dsig:SignatureValue>zIRYaxl5E...</dsig:SignatureValue>
  -<dsig:KeyInfo>
    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus>g8NRYMG30...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
  </dsig:KeyInfo>
</dsig:Signature>
  -<details>
    <timeOfIssue>2001-01-01T00:00:00</timeOfIssue>
  </details>
</issuer>
</license>

```

When an ebook is available, the following generic license is associated with it. This [license](#) allows anyone with a valid subscription license to [play](#) the ebook or download for offline reading.

An eBook [license](#).

```

-<license>
  <title>An Ebook License</title>
  -<grantGroup>
    -<forAll varName="subscriber">
      -<everyone>
        <ebook:subscription/>
      -<trustedIssuer>
        -<keyHolder>
          -<info>

```

```

    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus> p8sN4Kee...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
  </info>
</keyHolder>
</trustedIssuer>
</everyone>
</forAll>
-<keyHolder varRef="subscriber">
</keyHolder>
-<grant>
  <cx:play/>
  -<cx:digitalWork licensePartIdRef="book1">
    <cx:description xml:lang="en">A very good book</cx:description>
    <cx:description xml:lang="fr">Un tres bon livre</cx:description>
  -<cx:metadata>
    -<xml>
      -<cx:simpleDigitalWorkMetadata>
        <cx:title>A Book of James</cx:title>
        <cx:creator>James the first</cx:creator>
        <cx:copyright>Copyright 1999 Harper Collins Publishers</cx:copyright>
      </cx:simpleDigitalWorkMetadata>
    </xml>
  </cx:metadata>
</cx:digitalWork>
</grant>
-<grant>
  <obtain/>
  -<grant>
    -<keyHolder varRef="subscriber">
      </keyHolder>
      <cx:play/>
      -<cx:digitalWork licensePartIdRef="book1">
        <cx:description xml:lang="en">A very good book</cx:description>
        <cx:description xml:lang="fr">Un tres bon livre</cx:description>
      -<cx:metadata>
        -<xml>
          -<cx:simpleDigitalWorkMetadata>
            <cx:title>A Book of James</cx:title>
            <cx:creator>James the first</cx:creator>
            <cx:copyright>Copyright 1999 Harper Collins Publishers</cx:copyright>
          </cx:simpleDigitalWorkMetadata>
        </xml>
        </cx:metadata>
      </cx:digitalWork>
    </grant>
  </grant>
</grantGroup>
</license>

```

After Alice downloaded a copy of an eBook, the following license is generated for her so that she can play the eBook offline with no obligations. This license will stay valid even after Alice's subscription expires.

An offline eBook [license](#) for Alice.

```

-<license>
  <title>An Ebook License</title>
  -<grant>
    -<keyHolder licensePartId="Alice">
      -<info>
        -<dsig:KeyValue>
          -<dsig:RSAKeyValue>
            <dsig:Modulus>oRUTUiTQk...</dsig:Modulus>
            <dsig:Exponent>AQABAA==</dsig:Exponent>
          </dsig:RSAKeyValue>
        </dsig:KeyValue>
      </info>
    </keyHolder>
    <cx:play/>
  -<cx:digitalWork licensePartId="book1">
    <cx:description xml:lang="en">A very good book</cx:description>
    <cx:description xml:lang="fr">Un tres bon livre</cx:description>
  -<cx:metadata>
    -<xml>
      -<cx:simpleDigitalWorkMetadata>
        <cx:title>A Book of James</cx:title>
        <cx:creator>James the first</cx:creator>
        <cx:copyright>Copyright 1999 Harper Collins Publishers</cx:copyright>
      </cx:simpleDigitalWorkMetadata>
    </xml>
  </cx:metadata>
</cx:digitalWork>
</grant>
</license>

```

4.7 Territory Restriction

This business model illustrates how to specify territory information to enable regional pricing, and to offer publishers control over where content can be purchased.

In the following example, the first [grant](#) specifies the \$5.00 [fee](#) for use in the U.S. It takes precedence over the second [grant](#), which specifies a [fee](#) of \$7.00 for use elsewhere. [paymentFlat](#) specifies a one time fee in both grants.

A consumer pays \$5 for use in the U.S. and \$7 elsewhere.

```
-<license>
  -<inventory>
    -<cx:digitalWork licensePartId="eBook">
      -<cx:metadata>
        -<xml>
          -<cx:simpleDigitalWorkMetadata>
            <cx:title>XrML Unleashed</cx:title>
          </cx:simpleDigitalWorkMetadata>
        </xml>
      </cx:metadata>
    -<cx:locator>
      <cx:nonSecureIndirect URI="http://www.contentguard.com/xrmlUnleashed.spd"/>
    </cx:locator>
  </cx:digitalWork>
</inventory>
-<grant>
  -<forAll varName="anyone">
    </forAll>
    <principal varRef="anyone"/>
    <cx:play/>
    <cx:digitalWork licensePartIdRef="eBook"/>
  -<allConditions>
    -<sx:territory>
      -<sx:location>
        <sx:country>US</sx:country>
      </sx:location>
    </sx:territory>
    -<sx:fee>
      -<sx:paymentFlat>
        <sx:rate currency="USD">5.00</sx:rate>
      -<sx:paymentRecord>
        -<sx:stateReference>
          -<uddi>
            -<serviceKey>
              <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
            </serviceKey>
          </uddi>
          -<serviceParameters>
            -<datum>
              <principal varRef="anyone"/>
            </datum>
          </serviceParameters>
        </sx:stateReference>
      </sx:paymentRecord>
    </sx:paymentFlat>
  </sx:fee>
</allConditions>
</grant>
-<grant>
  -<forAll varName="anyone">
    </forAll>
    <principal varRef="anyone"/>
    <cx:play/>
    <cx:digitalWork licensePartIdRef="eBook"/>
  -<sx:fee>
    -<sx:paymentFlat>
      <sx:rate currency="USD">7.00</sx:rate>
    -<sx:paymentRecord>
      -<sx:stateReference>
        -<uddi>
          -<serviceKey>
            <uuid>D04951E4-332C-4693-B7DB-D3D1D1C21111</uuid>
          </serviceKey>
        </uddi>
        -<serviceParameters>
          -<datum>
            <principal varRef="anyone"/>
          </datum>
        </serviceParameters>
      </sx:stateReference>
    </sx:paymentRecord>
  </sx:paymentFlat>
</sx:fee>
</grant>
</license>
```

4.8 Temporal Ordering of Exercising Rights

This example shows temporal ordering of rights. Alice may listen to a piece of music as many times as she pleases provided she has listened to some commercial. The [grant](#) related to the commercial has a [trackReport](#) condition. When Alice attempts to listen to the piece of music, the [trackQuery](#) condition herein allows exercise of the right only when the state value tracked by the [trackReport](#) condition has a value greater than zero.

Alice must listen to some commercial before listening to a piece of music.

```
-<license>
-<inventory>
+<keyHolder licensePartId="Alice">
-<digitalResource licensePartId="Commercial">
  -<cx:metadata>
    -<xml>
      -<cx:simpleDigitalWorkMetadata>
        <cx:title>Toyota Ad</cx:title>
      </cx:simpleDigitalWorkMetadata>
    </xml>
  </cx:metadata>
</digitalResource>
-<digitalResource licensePartId="music">
  -<dsig:Reference URI="http://www.server.com/downloads/anInterestingSong.mp3">
    <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
    <dsig:DigestValue>qZk+NkcGgWq6PiVxeFDCbJzQzJ0=</dsig:DigestValue>
  </dsig:Reference>
</digitalResource>
</inventory>
-<grant>
-<keyHolder licensePartIdRef="Alice">
  </keyHolder>
  <cx:play/>
  <cx:digitalWork licensePartIdRef="Commercial"/>
-<sx:trackReport>
  -<sx:stateReference licensePartId="AdState">
    -<uddi>
      -<serviceKey>
        <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
      </serviceKey>
    </uddi>
  </sx:stateReference>
  <sx:communicationFailurePolicy>lax</sx:communicationFailurePolicy>
</sx:trackReport>
</grant>
-<grant>
-<keyHolder licensePartIdRef="Alice">
  </keyHolder>
  <cx:play/>
  <cx:digitalWork licensePartIdRef="Music"/>
-<sx:trackQuery>
  -<sx:stateReference licensePartId="AdState">
    -<uddi>
      -<serviceKey>
        <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
      </serviceKey>
    </uddi>
  </sx:stateReference>
  <sx:notLessThan>1</sx:notLessThan>
</sx:trackQuery>
</grant>
-<issuer>
-<dsig:Signature>
  -<dsig:SignedInfo>
    <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
    <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
  -<dsig:Reference>
    -<dsig:Transforms>
      <dsig:Transform Algorithm="http://www.xrml.org/schema/2001/11/xrml2core#license"/>
    </dsig:Transforms>
    <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
    <dsig:DigestValue>PB4QbKQCo941tTExbj1/Q==</dsig:DigestValue>
  </dsig:Reference>
  </dsig:SignedInfo>
  <dsig:SignatureValue>zIRYaxl5E...</dsig:SignatureValue>
  -<dsig:KeyInfo>
    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus>g8NRYMG30...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
  </dsig:KeyInfo>
</dsig:Signature>
-<details>
  <timeOfIssue>2001-01-27T15:30:00</timeOfIssue>
  -<validityInterval>
    <notBefore>2000-02-03T17:26:00</notBefore>
    <notAfter>3000-02-03T17:26:00</notAfter>
  </validityInterval>
</details>
</issuer>
</license>
```

4.9 Component Based Model

This business model illustrates how to specify different rights, conditions, and obligations to individual components of a composite work, as well as to the entire composite work.

Note in this example, `paymentFlat` specifies a one-time fee in both grants.

A consumer pays \$.20 for using an image in a Web page and \$1 for the entire page.

```
-<license>
  -<inventory>
    -<cx:digitalWork licensePartId="WebSite">
      <cx:description xml:lang="en">A very good Web site</cx:description>
      <cx:description xml:lang="fr">Un tres bon Web site</cx:description>
    -<cx:metadata>
      -<xml>
        -<cx:simpleDigitalWorkMetadata>
          <cx:title>Web site for the Book of James</cx:title>
          <cx:creator>James the first</cx:creator>
          <cx:owner>Mike the man</cx:owner>
          <cx:copyright>Copyright 1999 Harper Collins Publishers. All Rights Reserved.</cx:copyright>
        </cx:simpleDigitalWorkMetadata>
      </xml>
    </cx:metadata>
  -<cx:locator>
    <nonSecureIndirect URI="http://www.somedomain.com/bookOfJames/" />
  </cx:locator>
  -<cx:parts>
    -<cx:digitalWork licensePartId="webPageOne">
      <cx:description>Web page containing text and images that make up Chapter 1 for the Book of James</cx:descri
    -<cx:locator>
      <nonSecureIndirect URI="http://www.somedomain.com/bookOfJames/chap1.htm" />
    </cx:locator>
  </cx:digitalWork>
    -<cx:digitalWork licensePartId="webPageOneImage1">
      -<cx:metadata>
        -<xml>
          -<cx:simpleDigitalWorkMetadata>
            <cx:title>Image 1: Photon Celebshot Dogs</cx:title>
          </cx:simpleDigitalWorkMetadata>
        </xml>
      </cx:metadata>
    -<cx:locator>
      <nonSecureIndirect URI="http://www.somedomain.com/bookOfJames/images/chap1Image1.jpg" />
    </cx:locator>
  </cx:digitalWork>
  </cx:parts>
</cx:digitalWork>
</inventory>
-<grant>
  -<forAll varName="anyone">
  </forAll>
  <principal varRef="anyone" />
  <cx:play />
  <cx:digitalWork licensePartIdRef="webPageOne" />
  -<sx:fee>
    -<sx:paymentFlat>
      <sx:rate currency="USD">1.00</sx:rate>
    -<sx:paymentRecord>
      -<sx:stateReference>
        -<uddi>
          -<serviceKey>
            <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
          </serviceKey>
        </uddi>
        -<serviceParameters>
          -<datum>
            <principal varRef="anyone" />
          </datum>
        </serviceParameters>
      </sx:stateReference>
    </sx:paymentRecord>
  </sx:paymentFlat>
</sx:fee>
</grant>
-<grant>
  -<forAll varName="anyone">
  </forAll>
  <principal varRef="anyone" />
  <cx:play />
  <cx:digitalWork licensePartIdRef="webPageOneImage1" />
  -<sx:fee>
    -<sx:paymentFlat>
      <sx:rate currency="USD">0.20</sx:rate>
    -<sx:paymentRecord>
```

```

-<sx:stateReference>
  -<uddi>
    -<serviceKey>
      <uuid>D04951E4-332C-4693-B7DB-CRT882MAOFH2</uuid>
    </serviceKey>
  </uddi>
  -<serviceParameters>
    -<datum>
      <principal varRef="anyone"/>
    </datum>
  </serviceParameters>
</sx:stateReference>
</sx:paymentRecord>
</sx:paymentFlat>
</sx:fee>
</grant>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
    -<dsig:Reference>
      -<dsig:Transforms>
        <dsig:Transform Algorithm="http://www.xml.org/schema/2001/11/xrml2core#license"/>
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
      <dsig:DigestValue>PB4QbKQCo941tTExbj1/Q==</dsig:DigestValue>
    </dsig:Reference>
  </dsig:SignedInfo>
  <dsig:SignatureValue>alIDoedpL...</dsig:SignatureValue>
  -<dsig:KeyInfo>
    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus>g8NRYMG30...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
  </dsig:KeyInfo>
</dsig:Signature>
  -<details>
    <timeOfIssue>2000-01-27T15:30:00</timeOfIssue>
  </details>
</issuer>
</license>

```

4.10 User Type Based Model

This business model illustrates how to specify user-based pricing levels for different individual users or for different groups of users.

The first license in this example shows a simple way to identify membership of a club. The second license shows how to use this membership for different kinds of pricing.

Clearly, the membership can be replaced by other types of characterizing users, such as user roles, to specify other user type based models.

Consumers who are members of a club pay \$5, and all other consumers pay \$7, for playing a movie.

```

-<licenseGroup>
  -<license>
    -<grant>
      -<keyHolder>
        -<info>
          -<dsig:KeyValue>
            -<dsig:RSAKeyValue>
              <dsig:Modulus>Efgao6NYf...</dsig:Modulus>
              <dsig:Exponent>AQAA==</dsig:Exponent>
            </dsig:RSAKeyValue>
          </dsig:KeyValue>
        </info>
      </keyHolder>
      <possessProperty/>
      <sony:sonyClubMember/>
    </grant>
  -<issuer>
    -<dsig:Signature>
      -<dsig:SignedInfo>
        <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
        <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
      -<dsig:Reference>
        -<dsig:Transforms>
          <dsig:Transform Algorithm="http://www.xml.org/schema/2001/11/xrml2core#license"/>
        </dsig:Transforms>
        <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
        <dsig:DigestValue>PB4QbKQCo941tTExbj1/Q==</dsig:DigestValue>
      </dsig:Reference>
    </dsig:SignedInfo>
    <dsig:SignatureValue>AYmqOhSHb...</dsig:SignatureValue>
  </issuer>
</license>

```

```

-<dsig:KeyInfo>
  -<dsig:KeyValue>
    -<dsig:RSAKeyValue>
      <dsig:Modulus>X0j9q90Ax...</dsig:Modulus>
      <dsig:Exponent>AQABAA==</dsig:Exponent>
    </dsig:RSAKeyValue>
  </dsig:KeyValue>
</dsig:KeyInfo>
</dsig:Signature>
</issuer>
</license>
-<license>
  -<inventory>
    -<cx:digitalWork licensePartId="movie">
      -<cx:metadata>
        -<xml>
          -<cx:simpleDigitalWorkMetadata>
            <cx:title>Air Force One</cx:title>
          </cx:simpleDigitalWorkMetadata>
        </xml>
      </cx:metadata>
      -<cx:locator>
        -<secureIndirect URI="http://sonyPictures.com/AirForceOne">
          <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
          <dsig:DigestValue>0kccZ4a3zFW9OPT1qEIqSg==</dsig:DigestValue>
        </secureIndirect>
      </cx:locator>
    </cx:digitalWork>
  </inventory>
-<grant>
  -<forall varName="anyone">
    </forall>
    <principal varRef="anyone"/>
    <cx:play/>
    <cx:digitalWork licensePartId="movie"/>
  -<allConditions>
    -<prerequisiteRight>
      <principal varRef="anyone"/>
      <possessProperty/>
      <sony:sonyClubMember/>
    -<trustedIssuer>
      -<keyHolder>
        -<info>
          -<dsig:KeyValue>
            -<dsig:RSAKeyValue>
              <dsig:Modulus>X0j9q90Ax...</dsig:Modulus>
              <dsig:Exponent>AQABAA==</dsig:Exponent>
            </dsig:RSAKeyValue>
          </dsig:KeyValue>
        </info>
      </keyHolder>
    </trustedIssuer>
  </prerequisiteRight>
  -<sx:fee>
    -<sx:paymentPerUse>
      <sx:rate currency="USD">5.00</sx:rate>
    </sx:paymentPerUse>
    -<sx:to>
      -<sx:aba>
        <sx:institution>139371581</sx:institution>
        <sx:account>111111</sx:account>
      </sx:aba>
    </sx:to>
  </sx:fee>
  </allConditions>
</grant>
-<grant>
  -<forall varName="anyone">
    </forall>
    <principal varRef="anyone"/>
    <cx:play/>
    <cx:digitalWork licensePartId="movie"/>
  -<sx:fee>
    -<sx:paymentPerUse>
      <sx:rate currency="USD">7.00</sx:rate>
    </sx:paymentPerUse>
    -<sx:to>
      -<sx:aba>
        <sx:institution>139371581</sx:institution>
        <sx:account>111111</sx:account>
      </sx:aba>
    </sx:to>
  </sx:fee>
</grant>
</license>
</licenseGroup>

```

Note: it is also possible to express this equivalently using an [everyone](#) pattern instead of a [prerequisiteRight](#) condition.

4.11 Site Licenses

This business model illustrates how to specify a site license. Having specified a site license, other [grants](#) can be made to [everyone](#) having a site license. Site licensing may also be combined with other business models such as the tiered pricing model.

Two licenses are required to fulfill this model.

The first license grants that anyone in the [www.contentguard.com](#) domain is eligible to use the second license, under the following terms and conditions:

- Validity time condition: [validityInterval](#) specifies the period of time during which the content can be used.
- Territory condition: [territory](#) indicates the content can be used in the contentguard domain.
- Lack of revocation condition: [revocationFreshness](#) specifies that lack of revocation of this license has been verified within the last day. If and when this license is revoked, notice thereof will be posted to the web service specified by [revocationMechanism](#).
- Online approval condition: [seekApproval](#) specifies that approval by a designated service is required prior to each use.

Anyone in the [www.contentguard.com](#) domain can possess the SomeDomain site license.

```
-<license>
  -<grant>
    -<forall varName="anyone">
      </forall>
      <principal varRef="anyone"/>
      <possessProperty/>
    -<acn:siteLicense>
      <acn:typeId>promotion710</acn:typeId>
      <acn:url>www.somedomain.com/somesite</acn:url>
    </acn:siteLicense>
  -<allConditions>
    -<validityInterval>
      <notBefore>2001-05-29T19:28:00</notBefore>
      <notAfter>2003-05-29T19:28:00</notAfter>
    </validityInterval>
    -<sx:territory>
      -<sx:domain>
        <sx:url>www.contentguard.com</sx:url>
      </sx:domain>
    </sx:territory>
    -<revocationFreshness>
      <maxIntervalSinceLastCheck>P1D</maxIntervalSinceLastCheck>
    </revocationFreshness>
    -<sx:seekApproval>
      -<sx:stateReference>
        -<uddi>
          -<serviceKey>
            <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
          </serviceKey>
        </uddi>
      </sx:stateReference>
    </sx:seekApproval>
  </allConditions>
</grant>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
    -<dsig:Reference>
      -<dsig:Transforms>
        <dsig:Transform Algorithm="http://www.xml.org/schema/2001/11/xrml2core#license"/>
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
      <dsig:DigestValue>PB4QbK0QCo941tTExbj1/Q==</dsig:DigestValue>
    </dsig:Reference>
  </dsig:SignedInfo>
  <dsig:SignatureValue>AYmqOhSHb...</dsig:SignatureValue>
  -<dsig:KeyInfo>
    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus>X0j9q90Ax...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
  </dsig:KeyInfo>
</dsig:Signature>
-<details>
  -<revocationMechanism>
    -<querySignature>
      -<uddi>
        -<serviceKey>
          <uuid>1F2CBD46-CE56-4422-A2D5-F5E04DF94C6A</uuid>
        </serviceKey>
      </uddi>
    </querySignature>
  </revocationMechanism>
</details>
```

```
</issuer>
</license>
```

The second license contains the terms and conditions for use of content. The [prerequisiteRight](#) construct in the first [grant](#) limits the free usage to users with the site license. The second [grant](#) requires anyone else a one-time [fee](#) of \$2.00 to play any content.

Consumers with a site license can use the content for free. All other consumers pay \$2.

```
-<license>
-<grant>
  -<forall varName="anyone">
  </forall>
  -<forall varName="anySiteContent">
    <xmlExpression>--Expression that matches all site content--</xmlExpression>
  </forall>
  <principal varRef="anyone"/>
  <cx:play/>
  <cx:digitalWork varRef="anySiteContent"/>
-<prerequisiteRight>
  <principal varRef="anyone"/>
  <possessProperty/>
  -<acn:siteLicense>
    <acn:typeId>promotion710</acn:typeId>
    <acn:url>www.somedomain.com/somesite</acn:url>
  </acn:siteLicense>
  -<trustedIssuer>
    +<keyHolder>
    </trustedIssuer>
  </prerequisiteRight>
</grant>
-<grant>
  -<forall varName="anySiteContent">
    <xmlExpression>--XPath expression matching any peice of content on www.somedomain.com/somesite--</xmlExpressi
  </forall>
  -<forall varName="anyone">
  </forall>
  <principal varRef="anyone"/>
  <cx:play/>
  <cx:digitalWork varRef="anySiteContent"/>
-<sx:fee>
  -<sx:paymentFlat>
    <sx:rate currency="USD">2.00</sx:rate>
  -<sx:paymentRecord>
    -<sx:stateReference>
      -<uddi>
        -<serviceKey>
          <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
        </serviceKey>
      </uddi>
    -<serviceParameters>
      -<datum>
        <cx:digitalWork varRef="anySiteContent"/>
      </datum>
    </serviceParameters>
    </sx:stateReference>
    </sx:paymentRecord>
  </sx:paymentFlat>
</sx:fee>
</grant>
</license>
```

4.12 Payment to Multiple Rights Holders

This business model illustrates how to specify payment to more than one individual rights holder. As content is distributed down the distribution value chain, more individual rights holders may require payment for its use.

In this example, [paymentPerUse](#) specifies the amount charged for each use and [to](#) specifies the account to receive the payment. [allConditions](#) makes sure that both payments are made for each use.

Every time a document is printed, the consumer pays A \$.10 and B \$.05.

```
-<license>
-<grant>
  -<forall varName="anyone">
  </forall>
  <principal varRef="anyone"/>
  <cx:print/>
-<cx:digitalWork>
  -<cx:locator>
    <nonSecureIndirect URI="http://www.contentguard.com/sampleBook.spd"/>
  </cx:locator>
  </cx:digitalWork>
-<allConditions>
  -<sx:fee>
    -<sx:paymentPerUse>
```

```

    <sx:rate currency="USD">0.10</sx:rate>
  </sx:paymentPerUse>
-<sx:to>
  -<sx:aba>
    <sx:institution>222371863</sx:institution>
    <sx:account>123456</sx:account>
  </sx:aba>
</sx:to>
</sx:fee>
-<sx:fee>
  -<sx:paymentPerUse>
    <sx:rate currency="USD">0.05</sx:rate>
  </sx:paymentPerUse>
-<sx:to>
  -<sx:aba>
    <sx:institution>139371581</sx:institution>
    <sx:account>111111</sx:account>
  </sx:aba>
</sx:to>
</sx:fee>
</allConditions>
</grant>
</license>

```

4.13 Personal Lending

This business model illustrates how to specify the transfer of content and the rights, conditions, and obligations associated with it from one party to another, either temporarily or permanently. In this model, once a work is lent to someone else, the original user does not have access to the work until it is returned.

In this example, the first [grantGroup](#) allows a consumer, represented as a [keyHolder](#), to play a DVD movie and loan it to a friend. The second [grantGroup](#) allows the same consumer to issue new licenses for the [loan](#) right. Note the [issue](#) construct in the second [grant](#), which indicates that this consumer can issue new licenses for the loaner copies. The lending state is properly tracked by a [Web](#) service.

A consumer can lend a DVD movie to his/her friends during a rental period.

```

-<license>
  -<inventory>
    -<cx:digitalWork licensePartId="dvdMovie">
      -<cx:metadata>
        -<xml>
          -<cx:simpleDigitalWorkMetadata>
            <cx:title>Air Force One</cx:title>
          </cx:simpleDigitalWorkMetadata>
        </xml>
      </cx:metadata>
    -<cx:locator>
      -<secureIndirect URI="http://sonyPictures.com/AirForceOne">
        <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
        <dsig:DigestValue>0kccZ4a3zFW9OPT1qEIqSg==</dsig:DigestValue>
      </secureIndirect>
    </cx:locator>
  </cx:digitalWork>
</inventory>
-<grantGroup>
  -<keyHolder>
    -<info>
      -<dsig:KeyValue>
        -<dsig:RSAKeyValue>
          <dsig:Modulus>Efgao6NYf...</dsig:Modulus>
          <dsig:Exponent>AQAQAA==</dsig:Exponent>
        </dsig:RSAKeyValue>
      </dsig:KeyValue>
    </info>
  </keyHolder>
  -<validityInterval licensePartId="rentalPeriod">
    <notBefore>2001-05-20T19:28:00</notBefore>
    <notAfter>2001-05-29T19:28:00</notAfter>
  </validityInterval>
-<grant>
  <cx:play/>
  <cx:digitalWork licensePartIdRef="dvdMovie"/>
  -<sx:seekApproval>
    -<sx:stateReference>
      -<uddi>
        -<serviceKey>
          <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
        </serviceKey>
      </uddi>
    </sx:stateReference>
  </sx:seekApproval>
</grant>
-<grantGroup>
  -<grant>
    <cx:loan/>
    <cx:digitalWork licensePartIdRef="dvdMovie"/>

```

```

</grant>
-<grant>
  -<forall varName="anyone">
    </forall>
  -<forall varName="loanPeriod">
    </forall>
    <issue/>
    -<grant>
      <principal varRef="anyone"/>
      <cx:play/>
      <cx:digitalWork licensePartIdRef="dvdMovie"/>
      -<allConditions>
        <validityInterval licensePartIdRef="rentalPeriod"/>
        <validityInterval varRef="loanPeriod"/>
      </allConditions>
    </grant>
  -<sx:trackReport>
    -<sx:stateReference>
      -<uddi>
        -<serviceKey>
          <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
        </serviceKey>
      </uddi>
      -<serviceParameters>
        -<datum>
          <validityInterval varRef="loanPeriod"/>
        </datum>
      </serviceParameters>
    </sx:stateReference>
  </sx:trackReport>
</grant>
</grantGroup>
</grantGroup>
</license>

```

4.14 Giving

This business model illustrates how to specify the gift of content to someone else. Giving is similar to personal lending, except that here is no expectation that the content will be returned. In other words, it can be modeled as permanent personal lending.

In this example, the first [grant](#) allows a consumer, represented as a [keyHolder](#), to play a DVD movie for free, upon prior approval from an online service. The second [grantGroup](#) grants this consumer the right to [transfer](#) the movie to anyone as long as he pays a one-time [fee](#) of \$10.00. The [issue](#) construct indicates that this consumer can issue a new [license](#) for the same movie. The [trackReport](#) construct specifies the service to be reported to when a new [license](#) is issued.

A consumer pays a \$10 up-front fee for the rights to play and to give the work away to anyone else.

```

-<license>
  -<inventory>
    -<cx:digitalWork licensePartId="dvdMovie">
      -<cx:metadata>
        -<xml>
          -<cx:simpleDigitalWorkMetadata>
            <cx:title>Air Force One</cx:title>
          </cx:simpleDigitalWorkMetadata>
        </xml>
      </cx:metadata>
    -<cx:locator>
      -<secureIndirect URI="http://sonyPictures.com/AirForceOne">
        <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
        <dsig:DigestValue>0kccZ4a3zFW9OPTlqEIqSg==</dsig:DigestValue>
      </secureIndirect>
    </cx:locator>
  </cx:digitalWork>
</inventory>
-<grantGroup>
  -<keyHolder>
    -<info>
      -<dsig:KeyValue>
        -<dsig:RSAKeyValue>
          <dsig:Modulus>Efgao6NYf...</dsig:Modulus>
          <dsig:Exponent>AQAQAA==</dsig:Exponent>
        </dsig:RSAKeyValue>
      </dsig:KeyValue>
    </info>
  </keyHolder>
  -<sx:fee>
    -<sx:paymentFlat>
      <sx:rate currency="USD">10.00</sx:rate>
    -<sx:paymentRecord>
      -<sx:stateReference>
        -<uddi>
          -<serviceKey>
            <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
          </serviceKey>
        </uddi>
      </sx:stateReference>

```

```

    </sx:paymentRecord>
  </sx:paymentFlat>
</sx:fee>
- <grant>
  <cx:play/>
  <cx:digitalWork licensePartIdRef="dvdMovie"/>
  - <sx:seekApproval>
    - <sx:stateReference>
      - <uddi>
        - <serviceKey>
          <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
          </serviceKey>
        </uddi>
      </sx:stateReference>
    </sx:seekApproval>
  </grant>
- <grantGroup>
  - <grant>
    <cx:transfer/>
    <cx:digitalWork licensePartIdRef="dvdMovie"/>
  </grant>
  - <grant>
    - <forAll varName="anyone">
      </forAll>
    <issue/>
  </grant>
  <principal varRef="anyone"/>
  <cx:play/>
  <cx:digitalWork licensePartIdRef="dvdMovie"/>
</grant>
- <sx:trackReport>
  - <sx:stateReference>
    - <uddi>
      - <serviceKey>
        <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
        </serviceKey>
      </uddi>
    </sx:stateReference>
  </sx:trackReport>
</grant>
</grantGroup>
</grantGroup>
</license>

```

4.15 Superdistribution

This business model illustrates how to specify superdistribution of content in terms of associating the same or different sets of rights, conditions, and obligations for the superdistributed contents. In this model, the original consumer retains the rights granted to him/her, and new consumers are required to acquire the rights granted to them.

In this model, information on where rights are offered can be used to refer new users of content to acquire rights for themselves. To issue a different sets of rights, this model uses different business models for new consumers.

In the following example, the first two grants are made to a [keyHolder](#) named Alice for the right to [play](#) and [print](#) an eBook. The third [grant](#) allows anyone coming across this [license](#) to [issue](#) (super distribute) this eBook to everyone.

Alice can play an eBook for an up-front fee of \$2.00 and she can print it, as many times as needed, for an up-front fee of \$3.00. Anyone can superdistribute this eBook.

```

- <license>
  - <inventory>
    - <keyHolder licensePartId="Alice">
      - <info>
        - <dsig:KeyValue>
          - <dsig:RSAKeyValue>
            <dsig:Modulus>p8sN4KeeR...</dsig:Modulus>
            <dsig:Exponent>AQABAA==</dsig:Exponent>
          </dsig:RSAKeyValue>
        </dsig:KeyValue>
      </info>
    </keyHolder>
  - <cx:digitalWork licensePartId="eBook">
    - <cx:locator>
      <nonSecureIndirect URI="http://www.contentguard.com/xrmlUnleashed.spd"/>
    </cx:locator>
  </cx:digitalWork>
</inventory>
- <grantGroup>
  - <keyHolder licensePartIdRef="Alice">
    </keyHolder>
  - <grant>
    <cx:play/>
    <cx:digitalWork licensePartIdRef="eBook"/>
  - <sx:fee>
    - <sx:paymentFlat>
      <sx:rate currency="USD">2.00</sx:rate>
    </sx:paymentFlat>
  </sx:fee>

```

```

-<sx:stateReference>
  -<uddi>
    -<serviceKey>
      <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
    </serviceKey>
  </uddi>
  -<serviceParameters>
    -<datum>
      -<keyHolder licensePartIdRef="Alice">
        </keyHolder>
      </datum>
    -<datum>
      <cx:digitalWork licensePartIdRef="eBook"/>
    </datum>
    -<datum>
      <cx:play/>
    </datum>
  </serviceParameters>
</sx:stateReference>
</sx:paymentRecord>
</sx:paymentFlat>
-<sx:to>
  -<sx:aba>
    <sx:institution>222371864</sx:institution>
    <sx:account>123457</sx:account>
  </sx:aba>
</sx:to>
</sx:fee>
</grant>
-<grant>
  <cx:print/>
  <cx:digitalWork licensePartIdRef="eBook"/>
-<sx:fee>
  -<sx:paymentFlat>
    <sx:rate currency="USD">15.00</sx:rate>
  -<sx:paymentRecord>
    -<sx:stateReference>
      -<uddi>
        -<serviceKey>
          <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
        </serviceKey>
      </uddi>
      -<serviceParameters>
        -<datum>
          -<keyHolder licensePartIdRef="Alice">
            </keyHolder>
          </datum>
        -<datum>
          <cx:digitalWork licensePartIdRef="eBook"/>
        </datum>
        -<datum>
          <cx:print/>
        </datum>
      </serviceParameters>
    </sx:stateReference>
  </sx:paymentRecord>
</sx:paymentFlat>
-<sx:to>
  -<sx:aba>
    <sx:institution>222371864</sx:institution>
    <sx:account>123457</sx:account>
  </sx:aba>
</sx:to>
</sx:fee>
</grant>
</grantGroup>
-<grant>
  -<forall varName="anyone">
    </forall>
    <principal varRef="anyone"/>
    <obtain/>
  -<grantGroup licensePartId="superdistributedGrants">
    -<forall varName="anyone">
      </forall>
      <principal varRef="anyone"/>
    -<grant>
      <cx:play/>
      <cx:digitalWork licensePartIdRef="eBook"/>
    -<sx:fee>
      -<sx:paymentFlat>
        <sx:rate currency="USD">2.00</sx:rate>
      -<sx:paymentRecord>
        -<sx:stateReference>
          -<uddi>
            -<serviceKey>
              <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
            </serviceKey>
          </uddi>
          -<serviceParameters>
            -<datum>
              <cx:play/>
            </datum>
          </serviceParameters>
        </sx:stateReference>
      </sx:paymentRecord>
    </sx:paymentFlat>
  </forall>
</grantGroup>
</grant>

```

```

    -<datum>
      <cx:digitalWork licensePartIdRef="eBook" />
    </datum>
  -<datum>
    <principal varRef="anyone" />
  </datum>
  </serviceParameters>
</sx:stateReference>
</sx:paymentRecord>
</sx:paymentFlat>
-<sx:to>
  -<sx:aba>
    <sx:institution>222371864</sx:institution>
    <sx:account>123457</sx:account>
  </sx:aba>
  </sx:to>
</sx:fee>
</grant>
-<grant>
  <cx:print />
  <cx:digitalWork licensePartIdRef="eBook" />
  -<sx:fee>
    -<sx:paymentPerUse>
      <sx:rate currency="USD">3.00</sx:rate>
    </sx:paymentPerUse>
    -<sx:to>
      -<sx:aba>
        <sx:institution>222371864</sx:institution>
        <sx:account>123457</sx:account>
      </sx:aba>
      </sx:to>
    </sx:fee>
  </grant>
-<grant>
  <cx:extract />
  <cx:digitalWork licensePartIdRef="eBook" />
  -<sx:fee>
    -<sx:paymentFlat>
      <sx:rate currency="USD">8.00</sx:rate>
    -<sx:paymentRecord>
      -<sx:stateReference>
        -<uddi>
          -<serviceKey>
            <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
          </serviceKey>
        </uddi>
        -<serviceParameters>
          -<datum>
            <cx:extract />
          </datum>
          -<datum>
            <cx:digitalWork licensePartIdRef="eBook" />
          </datum>
          -<datum>
            <principal varRef="anyone" />
          </datum>
        </serviceParameters>
      </sx:stateReference>
    </sx:paymentRecord>
  </sx:paymentFlat>
  -<sx:to>
    -<sx:aba>
      <sx:institution>222371864</sx:institution>
      <sx:account>123457</sx:account>
    </sx:aba>
    </sx:to>
  </sx:fee>
</grant>
</grantGroup>
</grant>
</license>

```

New consumers are to acquire the following terms and conditions: [play](#) for an up-front fee of \$2.00, [print](#) for \$3.00 per copy, and [extract](#) from the book for an up-front fee of \$8.00. The [paymentFlat](#) construct is used to specify a one-time up-front fee; the [paymentPerUse](#) construct specify a payment each time a right is exercised.

Anyone can obtain the following rights: play, print and extract.

```

-<grant>
  -<forAll varName="anyone">
  </forAll>
  <principal varRef="anyone" />
  <obtain />
-<grantGroup licensePartId="superdistributedGrants">
  -<forAll varName="anyone">
  </forAll>
  <principal varRef="anyone" />
  -<grant>
    <cx:play />
  </grant>
</grantGroup>

```

```

<cx:digitalWork licensePartIdRef="eBook"/>
-<sx:fee>
  -<sx:paymentFlat>
    <sx:rate currency="USD">2.00</sx:rate>
    -<sx:paymentRecord>
      -<sx:stateReference>
        -<uddi>
          -<serviceKey>
            <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
          </serviceKey>
        </uddi>
      -<serviceParameters>
        -<datum>
          <cx:play/>
        </datum>
      -<datum>
        <cx:digitalWork licensePartIdRef="eBook"/>
      </datum>
      -<datum>
        <principal varRef="anyone"/>
      </datum>
    </serviceParameters>
  </sx:stateReference>
</sx:paymentRecord>
</sx:paymentFlat>
-<sx:to>
  -<sx:aba>
    <sx:institution>222371864</sx:institution>
    <sx:account>123457</sx:account>
  </sx:aba>
</sx:to>
</sx:fee>
</grant>
-<grant>
  <cx:print/>
  <cx:digitalWork licensePartIdRef="eBook"/>
  -<sx:fee>
    -<sx:paymentPerUse>
      <sx:rate currency="USD">3.00</sx:rate>
    </sx:paymentPerUse>
    -<sx:to>
      -<sx:aba>
        <sx:institution>222371864</sx:institution>
        <sx:account>123457</sx:account>
      </sx:aba>
    </sx:to>
  </sx:fee>
</grant>
-<grant>
  <cx:extract/>
  <cx:digitalWork licensePartIdRef="eBook"/>
  -<sx:fee>
    -<sx:paymentFlat>
      <sx:rate currency="USD">8.00</sx:rate>
    -<sx:paymentRecord>
      -<sx:stateReference>
        -<uddi>
          -<serviceKey>
            <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
          </serviceKey>
        </uddi>
      -<serviceParameters>
        -<datum>
          <cx:extract/>
        </datum>
      -<datum>
        <cx:digitalWork licensePartIdRef="eBook"/>
      </datum>
      -<datum>
        <principal varRef="anyone"/>
      </datum>
    </serviceParameters>
  </sx:stateReference>
</sx:paymentRecord>
</sx:paymentFlat>
-<sx:to>
  -<sx:aba>
    <sx:institution>222371864</sx:institution>
    <sx:account>123457</sx:account>
  </sx:aba>
</sx:to>
</sx:fee>
</grant>
</grantGroup>
</grant>

```

4.16 Distributor Copies

This business model illustrates how to specify a maximum number of copies that a distributor can make of a work for further

transmission or sale. This avoids making unnecessary, duplicated copies for distributors.

In this example, the first [license](#) certifies that a particular [keyHolder](#) is a distributor. The second [license](#) allows the same distributor the right to sell a content. Note that the right to sell is represented by the right to [issue](#) new licenses, in this context. The number of copies that can be sold is limited by an online service specified in the [exerciseLimit](#) condition.

A distributor can sell up to 40,000 [play](#) rights to a work within a year.

```
--<licenseGroup>
-<license>
  -<grant>
    -<keyHolder>
      -<info>
        -<dsig:KeyValue>
          -<dsig:RSAKeyValue>
            <dsig:Modulus>Efgao6NYf...</dsig:Modulus>
            <dsig:Exponent>AQAQAA==</dsig:Exponent>
          </dsig:RSAKeyValue>
        </dsig:KeyValue>
      </info>
    </keyHolder>
    <possessProperty/>
    <murphy:distributor/>
  </grant>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
    -<dsig:Reference>
      -<dsig:Transforms>
        <dsig:Transform Algorithm="http://www.xrml.org/schema/2001/11/xrml2core#license"/>
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
      <dsig:DigestValue>PB4QbKQCo941tTExbj1/Q==</dsig:DigestValue>
    </dsig:Reference>
    </dsig:SignedInfo>
    <dsig:SignatureValue>aMCJIH02g...</dsig:SignatureValue>
  -<dsig:KeyInfo>
    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus>p8sN4KeeR...</dsig:Modulus>
        <dsig:Exponent>AQAABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
    </dsig:KeyInfo>
  </dsig:Signature>
</issuer>
</license>
-<license>
  -<inventory>
    -<keyHolder licensePartId="issuedToParty">
      -<info>
        -<dsig:KeyValue>
          -<dsig:RSAKeyValue>
            <dsig:Modulus>Efgao6NYf...</dsig:Modulus>
            <dsig:Exponent>AQAQAA==</dsig:Exponent>
          </dsig:RSAKeyValue>
        </dsig:KeyValue>
      </info>
    </keyHolder>
  </inventory>
  -<grant>
    -<forall varName="anyone">
      </forall>
    -<keyHolder licensePartIdRef="issuedToParty">
      </keyHolder>
    <issue/>
  -<grant>
    <principal varRef="anyone"/>
    <cx:play/>
  -<digitalResource>
    -<dsig:Reference URI="http://www.server.com/downloads/anInterestingSong.mp3">
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
      <dsig:DigestValue>qZk+NkcGgWq6PiVxeFDcBjzQ2J0=</dsig:DigestValue>
    </dsig:Reference>
  </digitalResource>
</grant>
-<allConditions>
  -<sx:exerciseLimit>
    -<sx:stateReference>
      -<uddi>
        -<serviceKey>
          <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
        </serviceKey>
      </uddi>
    </sx:stateReference>
  </sx:exerciseLimit>
  -<validityInterval>
    <notBefore>2001-05-25T00:00:00</notBefore>
```

```

    <notAfter>2002-05-25T00:00:00</notAfter>
  </validityInterval>
  <-prerequisiteRight>
  <-keyHolder licensePartIdRef="issuedToParty">
  </keyHolder>
  <possessProperty/>
  <murphy:distributor/>
  <-trustedIssuer>
  <-keyHolder>
  <-info>
  <-dsig:KeyValue>
  <-dsig:RSAKeyValue>
  <dsig:Modulus>p8sN4KeeR...</dsig:Modulus>
  <dsig:Exponent>AQABAA==</dsig:Exponent>
  </dsig:RSAKeyValue>
  </dsig:KeyValue>
  </info>
  </keyHolder>
  </trustedIssuer>
</prerequisiteRight>
</allConditions>
</grant>
<-issuer>
<-dsig:Signature>
<-dsig:SignedInfo>
  <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
  <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmlsig#rsa-sha1"/>
  <-dsig:Reference>
  <-dsig:Transforms>
  <dsig:Transform Algorithm="http://www.xml.org/schema/2001/11/xml2core#license"/>
  </dsig:Transforms>
  <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmlsig#sha1"/>
  <dsig:DigestValue>PB4QbKQOCQ941tTExbjl/Q==</dsig:DigestValue>
  </dsig:Reference>
</dsig:SignedInfo>
<dsig:SignatureValue>mFdJFMcnl...</dsig:SignatureValue>
<-dsig:KeyInfo>
  <-dsig:KeyValue>
  <-dsig:RSAKeyValue>
  <dsig:Modulus>g8NRYMG30...</dsig:Modulus>
  <dsig:Exponent>AQABAA==</dsig:Exponent>
  </dsig:RSAKeyValue>
  </dsig:KeyValue>
</dsig:KeyInfo>
</dsig:Signature>
<-details>
  <timeOfIssue>2001-05-24T14:56:00</timeOfIssue>
  <-validityInterval>
  <notBefore>2001-05-25T00:00:00</notBefore>
  <notAfter>2003-05-25T00:00:00</notAfter>
  </validityInterval>
</details>
</issuer>
</license>
</licenseGroup>

```

4.17 Personal Copies

This business model illustrates how to specify the maximum number copies that a consumer can make of a work for personal use.

This example describes the right to [copy](#) a book. The lack of the right to [issue](#) implies that the new copies are for personal use only. The total number of copies is limited by an online service specified in the [exerciseLimit](#) condition.

A consumer may make up to 3 copies for his/her family's use.

```

<-license>
  <-grant>
  <-keyHolder>
  <-info>
  <-dsig:KeyValue>
  <-dsig:RSAKeyValue>
  <dsig:Modulus>Efgao6NYf...</dsig:Modulus>
  <dsig:Exponent>AQAQAA==</dsig:Exponent>
  </dsig:RSAKeyValue>
  </dsig:KeyValue>
  </info>
</keyHolder>
  <cx:copy/>
<-cx:digitalWork>
  <cx:description xml:lang="en">A very good book</cx:description>
  <cx:description xml:lang="fr">Un tres bon livre</cx:description>
<-cx:metadata>
  <-xml>
  <-cx:simpleDigitalWorkMetadata>
  <cx:title>A Book of James</cx:title>
  <cx:creator>James the first</cx:creator>
  <cx:owner>Mike the man</cx:owner>
  <cx:copyright>Copyright 1999 Harper Collins Publishers. All Rights Reserved.</cx:copyright>

```

```

    </cx:simpleDigitalWorkMetadata>
  </xml>
</cx:metadata>
-<cx:locator>
  <cx:nonSecureIndirect URI="http://www.contentguard.com/bookOfJames.spd"/>
</cx:locator>
</cx:digitalWork>
-<allConditions>
  -<sx:exerciseLimit>
    -<sx:stateReference>
      -<uddi>
        -<serviceKey>
          <uuid>E55129C1-74DF-40d0-B2A6-367AAB6AB05</uuid>
        </serviceKey>
      </uddi>
    </sx:stateReference>
  </sx:exerciseLimit>
  -<validityInterval>
    <notBefore>2001-05-25T00:00:00</notBefore>
    <notAfter>2003-05-25T00:00:00</notAfter>
  </validityInterval>
</allConditions>
</grant>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
      -<dsig:Reference>
        -<dsig:Transforms>
          <dsig:Transform Algorithm="http://www.xml.org/schema/2001/11/xrml2core#license"/>
        </dsig:Transforms>
        <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
        <dsig:DigestValue>PB4QbK0QCo941tTExbj1/Q==</dsig:DigestValue>
      </dsig:Reference>
    </dsig:SignedInfo>
    <dsig:SignatureValue>alIDoedpL...</dsig:SignatureValue>
  -<dsig:KeyInfo>
    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus>g8NRYMG30...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
  </dsig:KeyInfo>
</dsig:Signature>
  -<details>
    <timeOfIssue>2000-01-27T15:30:00</timeOfIssue>
  </details>
</issuer>
</license>

```

4.18 Nested Revenue Model

This business model illustrates how to specify payments for content usage in terms of percentages of previous transactions. This is useful when the recipient of the surcharge has no prior knowledge of the details of pricing in subsequent transactions.

Note in this example, the nested [fee](#) specification. The [paymentPerUse](#) construct specifies the charge amount each time a book is played. The [markup](#) construct specifies the royalty amount calculated based on each charge amount.

B receives 10% of the amount paid to A.

```

-<license>
  -<inventory>
    -<cx:digitalWork licensePartId="book1">
      <cx:description xml:lang="en">A very good book</cx:description>
      <cx:description xml:lang="fr">Un tres bon livre</cx:description>
    -<cx:metadata>
      -<xml>
        -<cx:simpleDigitalWorkMetadata>
          <cx:title>A Book of James</cx:title>
          <cx:creator>James the first</cx:creator>
          <cx:copyright>Copyright 1999 Harper Collins Publishers. All Rights Reserved.</cx:copyright>
        </cx:simpleDigitalWorkMetadata>
      </xml>
    </cx:metadata>
  -<cx:locator>
    <cx:nonSecureIndirect URI="http://www.contentguard.com/bookOfJames.spd"/>
  </cx:locator>
</cx:digitalWork>
</inventory>
-<grant>
  -<keyHolder>
    -<info>
      -<dsig:KeyValue>
        -<dsig:RSAKeyValue>
          <dsig:Modulus>Efgao6NYf...</dsig:Modulus>
          <dsig:Exponent>AQAA==</dsig:Exponent>

```

```

    </dsig:RSAKeyValue>
  </dsig:KeyValue>
</info>
</keyHolder>
<cx:play/>
<cx:digitalWork licensePartIdRef="book1"/>
-<allConditions>
  -<sx:fee>
    -<sx:markup>
      <sx:rate>0.10</sx:rate>
      -<sx:fee licensePartId="baseFee">
        -<sx:paymentPerUse>
          <sx:rate currency="USD">5.00</sx:rate>
        </sx:paymentPerUse>
        -<sx:to>
          -<sx:aba>
            <sx:institution>139371581</sx:institution>
            <sx:account>111111</sx:account>
          </sx:aba>
        </sx:to>
      </sx:fee>
    </sx:markup>
    -<sx:to>
      -<sx:aba>
        <sx:institution>222371864</sx:institution>
        <sx:account>123457</sx:account>
      </sx:aba>
    </sx:to>
  </sx:fee>
</allConditions>
</grant>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
    -<dsig:Reference>
      -<dsig:Transforms>
        <dsig:Transform Algorithm="http://www.xml.org/schema/2001/11/xrml2core#license"/>
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
      <dsig:DigestValue>PB4QbKQOC0941tTExbjl/Q==</dsig:DigestValue>
    </dsig:Reference>
    </dsig:SignedInfo>
    <dsig:SignatureValue>alIDoedpL...</dsig:SignatureValue>
  -<dsig:KeyInfo>
    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus>g8NRYMG30...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
  </dsig:KeyInfo>
</dsig:Signature>
-<details>
  <timeOfIssue>2000-01-27T15:30:00</timeOfIssue>
</details>
</issuer>
</license>

```

4.19 Accessing Web Service

This model illustrates how to transmit purchase orders to an identified web service. An identified party is authorized to transmit only purchase orders to an identified web service, subject to some interesting and useful restrictions related to license revocation. License revocation occurs when a license is known to have been compromised.

The following [license](#) specifies that lack of revocation must have been verified within the last day for each purchase order whose total is more than \$25.00. If and when this license is revoked, notice thereof will be posted to the web service specified by [revocationMechanism](#).

Online Purchase Orders of more than \$25.00 are subject to revocation check.

```

-<license>
  -<grant>
    -<keyHolder>
      -<info>
        -<dsig:KeyValue>
          -<dsig:RSAKeyValue>
            <dsig:Modulus>cR0QWMWaq...</dsig:Modulus>
            <dsig:Exponent>AQABAA==</dsig:Exponent>
          </dsig:RSAKeyValue>
        </dsig:KeyValue>
      </info>
    </keyHolder>
    <po:transmitDocuments/>
  -<serviceReference>
    -<uddi>

```

```

-<serviceKey>
  <uuid>EE4A90A5-8AC9-4f31-85F7-6619AA573449</uuid>
  </serviceKey>
</uddi>
</serviceReference>
-<allConditions>
-<po:permittedDocumentType>
  -<po:schema>
    <po:namespace>http://www.xrml.org/schema/2001/11/po</po:namespace>
    <po:type>PURCHASE_ORDER</po:type>
  </po:schema>
</po:permittedDocumentType>
-<po:documentLimitation>
  -<po:guard>
    -<po:schema>
      <po:namespace>http://www.xrml.org/schema/2001/11/po</po:namespace>
      <po:type>PURCHASE_ORDER</po:type>
    </po:schema>
  </po:guard>
  -<po:limitations>
    <po:pattern>purchaseOrder/Total < 1000</po:pattern>
    -<po:credentialRevocationCheck>
      <po:pattern>purchaseOrder/Total >= 25</po:pattern>
      -<revocationFreshness>
        <maxIntervalSinceLastCheck>P1D</maxIntervalSinceLastCheck>
      </revocationFreshness>
    </po:credentialRevocationCheck>
    -<po:credentialRevocationCheck>
      <po:pattern>purchaseOrder/Total < 25</po:pattern>
      -<revocationFreshness>
        <noCheckNecessary/>
      </revocationFreshness>
    </po:credentialRevocationCheck>
  </po:limitations>
</po:documentLimitation>
-<validityInterval>
  <notAfter>2003-05-24T16:20:00</notAfter>
</validityInterval>
</allConditions>
</grant>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
    -<dsig:Reference>
      -<dsig:Transforms>
        <dsig:Transform Algorithm="http://www.xrml.org/schema/2001/11/xrml2core#license"/>
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
      <dsig:DigestValue>PB4QbK0QCo941tTExbjl/Q==</dsig:DigestValue>
    </dsig:Reference>
    </dsig:SignedInfo>
    <dsig:SignatureValue>AYmq0hSHb...</dsig:SignatureValue>
  -<dsig:KeyInfo>
    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus>X0j9q90Ax...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
  </dsig:KeyInfo>
</dsig:Signature>
-<details>
  <timeOfIssue>2001-05-24T16:20:00</timeOfIssue>
  -<revocationMechanism>
    -<querySignature>
      -<uddi>
        -<serviceKey>
          <uuid>1F2CBD46-CE56-4422-A2D5-F5E04DF94C6A</uuid>
        </serviceKey>
      </uddi>
    </querySignature>
  </revocationMechanism>
</details>
</issuer>
</license>

```

4.20 Software Execution

In the software business, it is typical to tie an application to a particular identity and device.

The following example requires that a [keyHolder](#) named Alice [execute](#) a software called "pico" on the foo.com mainframe. The [source](#) condition restricts the device from which the software can be executed.

Alice can execute pico on the foo.com mainframe.

```
-<license>
```

```

-<inventory>
  -<cx:digitalWork licensePartId="pico">
    -<cx:locator>
      -<secureIndirect URI="http://foo.com.mainframe/pico.exe">
        <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
        <dsig:DigestValue>0kccZ4a3zFW9OPTlqEIqSg==</dsig:DigestValue>
      </secureIndirect>
    </cx:locator>
  </cx:digitalWork>
  -<keyHolder licensePartId="fooMainframe">
    -<info>
      -<dsig:KeyValue>
        -<dsig:RSAKeyValue>
          <dsig:Modulus>n5gzmvv4/...</dsig:Modulus>
          <dsig:Exponent>AQABAA==</dsig:Exponent>
        </dsig:RSAKeyValue>
      </dsig:KeyValue>
    </info>
  </keyHolder>
</inventory>
-<grant>
  -<keyHolder licensePartId="Alice">
    -<info>
      -<dsig:KeyValue>
        -<dsig:RSAKeyValue>
          <dsig:Modulus>n5gzmvv4/...</dsig:Modulus>
          <dsig:Exponent>AQABAA==</dsig:Exponent>
        </dsig:RSAKeyValue>
      </dsig:KeyValue>
    </info>
  </keyHolder>
  <cx:execute/>
  <cx:digitalWork licensePartIdRef="pico"/>
  -<cx:source>
    -<keyHolder licensePartIdRef="fooMainframe">
      </keyHolder>
    </cx:source>
  </grant>
</license>

```

4.21 Confidentiality of Rights

In all business models, it may be necessary sometimes to keep the confidentiality of a license or some terms and conditions.

The following is an example of an encrypted [license](#), when total confidentiality is required.

An encrypted license.

```

-<license>
  -<encryptedLicense Type="http://www.w3.org/2001/04/xmlenc#Content">
    <enc:EncryptionMethod Algorithm="http://www.w3.org/2001/04/xmlenc#3des-cbc"/>
  -<dsig:KeyInfo>
    <dsig:KeyName>OurSecretSymmetricKey</dsig:KeyName>
  </dsig:KeyInfo>
  -<enc:CipherData>
    <enc:CipherValue>SDfkDWEjeSdkj3987123Djkrdgt8923gKL3jdf890dfDFjg0df9j3rgkljsdfgjidjFjFjFjkjHEHfgDJIJERWEOHJE
  </enc:CipherData>
  </encryptedLicense>
</license>

```

In the following is a [license](#), the first [grant](#) allows anyone to [play](#) a movie for a one-time fee of \$10.00. The second [grant](#) is encrypted to keep the content of the grant secret.

An encrypted grant.

```

-<license>
  -<grant>
    <cx:play/>
    -<cx:digitalWork licensePartId="dvdMovie">
      -<cx:metadata>
        -<xml>
          -<cx:simpleDigitalWorkMetadata>
            <cx:title>Air Force One</cx:title>
          </cx:simpleDigitalWorkMetadata>
        </xml>
      </cx:metadata>
    -<cx:locator>
      -<secureIndirect URI="http://sonyPictures.com/AirForceOne">
        <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
        <dsig:DigestValue>0kccZ4a3zFW9OPTlqEIqSg==</dsig:DigestValue>
      </secureIndirect>
    </cx:locator>
  </cx:digitalWork>
  -<sx:fee>
    -<sx:paymentFlat>
      <sx:rate currency="USD">10.00</sx:rate>
    </sx:paymentFlat>
  </sx:fee>
</grant>
</license>

```

```

-<sx:paymentRecord>
  -<sx:stateReference>
    -<uddi>
      -<serviceKey>
        <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
      </serviceKey>
    </uddi>
  </sx:stateReference>
</sx:paymentRecord>
</sx:paymentFlat>
</sx:fee>
</grant>
-<grant>
  -<encryptedGrant Type="http://www.w3.org/2001/04/xmlenc#Content">
    <enc:EncryptionMethod Algorithm="http://www.w3.org/2001/04/xmlenc#rsa-1_5"/>
  -<dsig:KeyInfo>
    <dsig:KeyName>Alice</dsig:KeyName>
  </dsig:KeyInfo>
  -<enc:CipherData>
    <enc:CipherReference URI="cid:33"/>
  </enc:CipherData>
</encryptedGrant>
</grant>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
    -<dsig:Reference>
      -<dsig:Transforms>
        <dsig:Transform Algorithm="http://www.xml.org/schema/2001/11/xrml2core#license"/>
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
      <dsig:DigestValue>PB4QbK0QCo941tTExbj1/Q==</dsig:DigestValue>
    </dsig:Reference>
    </dsig:SignedInfo>
    <dsig:SignatureValue>alIDoedpL...</dsig:SignatureValue>
  -<dsig:KeyInfo>
    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus>g8NRYMG30...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
  </dsig:KeyInfo>
  </dsig:Signature>
  -<details>
    <timeOfIssue>2000-01-27T15:30:00</timeOfIssue>
  </details>
</issuer>
</license>

```

4.22 Watermark and Content Fragments

In some business models where encrypted content must be decrypted before being rendered, watermark can be inserted in the content itself to make pirated copies identifiable.

The following example grants the right to [print](#) the first 10 pages of a book and it is requested that [watermark](#) information is placed in the printed output. Note in this example, the `content` condition is used to reference a fragment of the book.

Watermark the printed output

```

-<license>
  -<inventory>
    -<cx:digitalWork licensePartId="logo">
      <cx:description>watermark logo</cx:description>
    -<cx:locator>
      -<secureIndirect URI="http://www.usc.edu/trojan.bmp">
        <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
        <dsig:DigestValue>PlccW6bazFW9OPTlqEIqSk==</dsig:DigestValue>
      </secureIndirect>
    </cx:locator>
  </cx:digitalWork>
</inventory>
-<grant>
  -<keyHolder>
    -<info>
      -<dsig:KeyValue>
        -<dsig:RSAKeyValue>
          <dsig:Modulus>p8sN4Kee...</dsig:Modulus>
          <dsig:Exponent>AQABAA==</dsig:Exponent>
        </dsig:RSAKeyValue>
      </dsig:KeyValue>
    </info>
  </keyHolder>
  <cx:print/>
  -<cx:digitalWork>
    <cx:description>Alice In the Wonder Land</cx:description>
  </cx:digitalWork>

```

```

</cx:digitalWork>
-<allConditions>
  -<school:content>
    <school:unit type="onix:NumberOfPages" />
    <school:from>1</school:from>
    <school:to>10</school:to>
  </school:content>
  -<cx:watermark>
    <cx:user-name/>
    <cx:string>Title: 'Alice In the Wonder Land'</cx:string>
    <cx:render-location/>
    <cx:render-time/>
    <cx:object licensePartIdRef="logo" />
  </cx:watermark>
</allConditions>
</grant>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315" />
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1" />
    -<dsig:Reference>
      -<dsig:Transforms>
        <dsig:Transform Algorithm="http://www.xml.org/schema/2001/11/xrml2core#license" />
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1" />
      <dsig:DigestValue>PB4QbKQCo941tTExbj1/Q==</dsig:DigestValue>
    </dsig:Reference>
    </dsig:SignedInfo>
    <dsig:SignatureValue>alIDoedpL...</dsig:SignatureValue>
  -<dsig:KeyInfo>
    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus>g8NRYMG30...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
    </dsig:KeyInfo>
  </dsig:Signature>
  -<details>
    <timeOfIssue>2000-01-27T15:30:00</timeOfIssue>
  </details>
</issuer>
</license>

```

4.23 Secure Device

In cases where tamper resistant hardware is not available, security level is one way to restrict access to only authorized devices.

The following example allows only projectors with certain security level to play a movie.

The first [license](#) certifies projectors with certain characteristics and assigns them a security level of 5. The [forAll](#) construct defines the characteristics required of a projector. The first [grant](#) certifies such projector and the second [grant](#) assigns it a security level of 5.

Certifying authorized projectors

```

-<license>
  -<inventory>
    -<keyHolder licensePartId="trustedIssuer">
      -<info>
        -<dsig:KeyValue>
          -<dsig:RSAKeyValue>
            <dsig:Modulus>X0j9q90Ax...</dsig:Modulus>
            <dsig:Exponent>AQABAA==</dsig:Exponent>
          </dsig:RSAKeyValue>
        </dsig:KeyValue>
      </info>
    </keyHolder>
  </inventory>
  -<grant>
    -<forAll varName="projectorEpson">
      -<everyone>
        -<school:projectorProperties>
          <school:resolution>SXGA</school:resolution>
          <school:manufacturer>EPSON</school:manufacturer>
          <school:sizeCategory>Portable</school:sizeCategory>
        </school:projectorProperties>
      -<trustedIssuer>
        -<keyHolder licensePartIdRef="trustedIssuer">
          </keyHolder>
        </trustedIssuer>
      </everyone>
    </forAll>
  -<keyHolder licensePartIdRef="projectorEpson">
    </keyHolder>
  <possessProperty/>

```

```

    <school:projector/>
  </grant>
-<grant>
  -<forall varName="projectorEpson">
    -<everyone>
      -<school:projectorProperties>
        <school:resolution>SXGA</school:resolution>
        <school:manufacturer>EPSON</school:manufacturer>
        <school:sizeCategory>Portable</school:sizeCategory>
      </school:projectorProperties>
      -<trustedIssuer>
        -<keyHolder licensePartIdRef="trustedIssuer">
          </KeyHolder>
        </trustedIssuer>
      </everyone>
    </forall>
  -<keyHolder varRef="projectorEpson">
    </keyHolder>
  <possessProperty/>
  -<school:kernelSecurityLevel>
    <cx:value>5</cx:value>
  </school:kernelSecurityLevel>
</grant>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
      -<dsig:Reference>
        -<dsig:Transforms>
          <dsig:Transform Algorithm="http://www.xml.org/schema/2001/11/xrml2core#license"/>
        </dsig:Transforms>
        <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
        <dsig:DigestValue>PB4QbK0QCo941tTExbj1/Q==</dsig:DigestValue>
      </dsig:Reference>
    </dsig:SignedInfo>
    <dsig:SignatureValue>zIRYaxl5E...</dsig:SignatureValue>
  -<dsig:KeyInfo>
    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus>g8NRYMG30...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
  </dsig:KeyInfo>
</dsig:Signature>
-<details>
  <timeOfIssue>2001-01-27T15:30:00</timeOfIssue>
  -<validityInterval>
    <notBefore>2000-02-03T17:26:00</notBefore>
    <notAfter>3000-02-03T17:26:00</notAfter>
  </validityInterval>
</details>
</issuer>
</license>

```

in the following [license](#), the [renderer](#) condition restricts the rendering of a movie to a certified projector.

Only certified projectors can render a movie

```

-<license>
  -<inventory>
    -<keyHolder licensePartId="trustedIssuer">
      -<info>
        -<dsig:KeyValue>
          -<dsig:RSAKeyValue>
            <dsig:Modulus>g8NRYMG30...</dsig:Modulus>
            <dsig:Exponent>AQABAA==</dsig:Exponent>
          </dsig:RSAKeyValue>
        </dsig:KeyValue>
      </info>
    </keyHolder>
  </inventory>
  -<grant>
    -<forall varName="projectorEpson">
      -<everyone>
        <school:projector/>
        -<trustedIssuer>
          <principal licensePartIdRef="trustedIssuer"/>
        </trustedIssuer>
      </everyone>
    -<everyone>
      -<school:kernelSecurityLevel>
        <cx:value>5</cx:value>
      </school:kernelSecurityLevel>
    -<trustedIssuer>
      <principal licensePartIdRef="trustedIssuer"/>
    </trustedIssuer>
  </everyone>
    </forall>

```

```

-<forall varName="studentGroup">
  -<everyone>
    <sx:dnsName>www.usc.edu</sx:dnsName>
    -<trustedIssuer>
      <principal licensePartIdRef="trustedIssuer"/>
    </trustedIssuer>
  </everyone>
</forall>
<cx:play/>
-<cx:digitalWork>
  -<cx:metadata>
    -<xml>
      -<cx:simpleDigitalWorkMetadata>
        <cx:title>Alice in the Wonder Land</cx:title>
        <cx:copyright>Copyright 1999 Addison Wesley. All Rights Reserved.</cx:copyright>
        <onix:mediaFileTypeCode>movie0001</onix:mediaFileTypeCode>
      </cx:simpleDigitalWorkMetadata>
    </xml>
  </cx:metadata>
  -<cx:locator>
    -<secureIndirect URI="http://sonyPictures.com/AliceInTheWonderLand">
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
      <dsig:DigestValue>0kccZ4a3zFW9OPTlqEIqSg==</dsig:DigestValue>
    </secureIndirect>
  </cx:locator>
</cx:digitalWork>
-<cx:renderer>
  -<keyHolder varRef="projectorEpson">
    </keyHolder>
  </cx:renderer>
</grant>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
    -<dsig:Reference>
      -<dsig:Transforms>
        <dsig:Transform Algorithm="http://www.xml.org/schema/2001/11/xrml2core#license"/>
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
      <dsig:DigestValue>PB4QbKQOC0941tTExbjl/Q==</dsig:DigestValue>
    </dsig:Reference>
    </dsig:SignedInfo>
    <dsig:SignatureValue>zIRYaxl5E...</dsig:SignatureValue>
  -<dsig:KeyInfo>
    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus>g8NRYMG30...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
  </dsig:KeyInfo>
</dsig:Signature>
  -<details>
    <timeOfIssue>2001-01-27T15:30:00</timeOfIssue>
  -<validityInterval>
    <notBefore>2000-02-03T17:26:00</notBefore>
    <notAfter>3000-02-03T17:26:00</notAfter>
  </validityInterval>
</details>
</issuer>
</license>

```

4.24 Third-party Metadata

This example shows how to incorporate third-party metadata into an XrML license. Note how `mpeg:DIDL` is used as metadata to describe a given [digitalWork](#).

MPEG metadata

```

-<license>
  -<inventory>
    -<keyHolder licensePartId="Alice">
      -<info>
        -<dsig:KeyValue>
          -<dsig:RSAKeyValue>
            <dsig:Modulus>4hre4NP7R...</dsig:Modulus>
            <dsig:Exponent>AQABAA==</dsig:Exponent>
          </dsig:RSAKeyValue>
        </dsig:KeyValue>
      </info>
    </keyHolder>
  </inventory>
  -<grant>
    -<keyHolder licensePartIdRef="Alice">
      </keyHolder>
    <cx:play/>
  </grant>
</license>

```

```

- <cx:digitalWork>
- <cx:metadata>
  - <xml>
    - <mpeg21:DIDL>
      - <mpeg21:ITEM>
        - <mpeg21:DESCRIPTOR>
          - <mpeg21:STATEMENT TYPE="text/xml">
            - <mpeg7:Mpeg7>
              - <mpeg7:DescriptionUnit xsi:type="mpeg7:CreationInformationType">
                - <mpeg7:Creation>
                  - <mpeg7:Title>When the Thistle Blooms</mpeg7:Title>
                  - <mpeg7:Creator>
                    <mpeg7:Role href="urn:mpeg:mpeg7:cs:MPEG7RoleCS:PERFORMER"/>
                    - <mpeg7:PersonGroup>
                      <mpeg7:Name>Always Red</mpeg7:Name>
                    </mpeg7:PersonGroup>
                  </mpeg7:Creator>
                  - <mpeg7:Creator>
                    <mpeg7:Role href="urn:mpeg:mpeg7:cs:MPEG7RoleCS:PUBLISHER"/>
                    - <mpeg7:Organization>
                      <mpeg7:Name>PDQ Records</mpeg7:Name>
                    </mpeg7:Organization>
                  </mpeg7:Creator>
                </mpeg7:Creation>
              </mpeg7:DescriptionUnit>
            </mpeg7:Mpeg7>
          </mpeg21:STATEMENT>
        </mpeg21:DESCRIPTOR>
      - <mpeg21:DESCRIPTOR>
        - <mpeg21:STATEMENT TYPE="text/xml">
          - <RDF:Description>
            <dc:title>When the Thistle Blooms</dc:title>
            <dc:creator>Always Red</dc:creator>
            <dc:publisher>PDQ Records</dc:publisher>
          </RDF:Description>
        </mpeg21:STATEMENT>
      </mpeg21:DESCRIPTOR>
    - <mpeg21:COMPONENT>
      <mpeg21:RESOURCE REF="rtsp://telemedial:/v11.aac"/>
    </mpeg21:COMPONENT>
  </mpeg21:ITEM>
</mpeg21:DIDL>
</xml>
</cx:metadata>
</cx:digitalWork>
- <validityInterval>
  <notBefore>2001-11-15T04:03:02</notBefore>
  <notAfter>2001-12-06T04:03:02</notAfter>
</validityInterval>
</grant>
- <issuer>
  - <dsig:Signature>
    - <dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
    - <dsig:Reference>
      - <dsig:Transforms>
        <dsig:Transform Algorithm="http://www.xml.org/schema/2001/11/xrml2core#license"/>
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
      <dsig:DigestValue>PB4QbK0QCo941tTExbj1/Q==</dsig:DigestValue>
    </dsig:Reference>
    </dsig:SignedInfo>
    <dsig:SignatureValue>AYmq0hSHb...</dsig:SignatureValue>
  - <dsig:KeyInfo>
    - <dsig:KeyValue>
      - <dsig:RSAKeyValue>
        <dsig:Modulus>YPNnae05g...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
    </dsig:KeyInfo>
  </dsig:Signature>
- <details>
  <timeOfIssue>2001-11-15T04:03:02</timeOfIssue>
</details>
</issuer>
</license>

```

5 Third-party Examples

5.1 Distance Learning (<http://www.vide.net/resources/conferences/mdvc2001/DRMbreakout.ppt>)

stitutional lending enables library and corporate business models. In this example, a digital video lecture at Georgia Tech is limited to registrants of the course, each of whom was issued a digital certificate identifying them as registrants. Non-registrants may view the course for a metered fee of \$10 per hour during the course period. Non-registrants will receive a lower-resolution video file than registrants. Geoffrey Smith, the course Graduate Teaching Assistant, has many rights for the duration of the course.

Two registration licenses are used in this example. One is a student registration; the other is a teaching assistant registration.

A student registration license.

```
-<license>
-<grant>
  -<keyHolder>
    -<info>
      -<dsig:KeyValue>
        -<dsig:RSAKeyValue>
          <dsig:Modulus>oRUTUiTQk...</dsig:Modulus>
          <dsig:Exponent>AQABAA==</dsig:Exponent>
        </dsig:RSAKeyValue>
      </dsig:KeyValue>
    </info>
  </keyHolder>
  <possessProperty/>
-<library:identification>
  <library:scheme>http://www.gatech.edu/registration</library:scheme>
  <library:value>student</library:value>
</library:identification>
</grant>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
    -<dsig:Reference>
      -<dsig:Transforms>
        <dsig:Transform Algorithm="http://www.xml.org/schema/2001/11/xrml2core#license"/>
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
      <dsig:DigestValue>PB4QbK0QCo941tTExbj1/Q==</dsig:DigestValue>
    </dsig:Reference>
    </dsig:SignedInfo>
    <dsig:SignatureValue>AYmqOhSHb...</dsig:SignatureValue>
  -<dsig:KeyInfo>
    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus>oRUTUiTQk...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
  </dsig:KeyInfo>
</dsig:Signature>
-<details>
  <timeOfIssue>2001-01-01T04:03:02</timeOfIssue>
</details>
</issuer>
</license>
```

A registration license for Geoffrey Smith, a teaching assistant.

```
-<license>
-<inventory>
  -<keyHolder licensePartId="ta">
    -<info>
      -<dsig:KeyValue>
        -<dsig:RSAKeyValue>
          <dsig:Modulus>Efgao6NYf...</dsig:Modulus>
          <dsig:Exponent>AQAQAA==</dsig:Exponent>
        </dsig:RSAKeyValue>
      </dsig:KeyValue>
    </info>
  </keyHolder>
</inventory>
-<grant>
  -<keyHolder licensePartIdRef="ta">
    </keyHolder>
    <possessProperty/>
    <sx:commonName>Geoffrey Smith</sx:commonName>
  </grant>
-<grant>
  -<keyHolder licensePartIdRef="ta">
    </keyHolder>
    <possessProperty/>
    -<school:physicalSecurityLevel>
      <cx:value>4</cx:value>
    </school:physicalSecurityLevel>
  </grant>
-<grant>
  -<keyHolder licensePartIdRef="ta">
    </keyHolder>
    <possessProperty/>
    -<school:trustedStorageSecurityLevel>
      <cx:value>5</cx:value>
    </school:trustedStorageSecurityLevel>
  </grant>
-<grant>
  -<keyHolder licensePartIdRef="ta">
    </keyHolder>
```

```

    <possessProperty/>
  -<school:protocolLevelSecurityLevel>
    <cx:value>4</cx:value>
  </school:protocolLevelSecurityLevel>
</grant>
-<grant>
  -<keyHolder licensePartIdRef="ta">
    </keyHolder>
    <possessProperty/>
  -<school:kernelSecurityLevel>
    <cx:value>5</cx:value>
  </school:kernelSecurityLevel>
</grant>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
    -<dsig:Reference>
      -<dsig:Transforms>
        <dsig:Transform Algorithm="http://www.xml.org/schema/2001/11/xrml2core#license"/>
      </dsig:Transforms>
      <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
      <dsig:DigestValue>PB4QbK0QCo941tTExbj1/Q==</dsig:DigestValue>
    </dsig:Reference>
    </dsig:SignedInfo>
    <dsig:SignatureValue>AYmqOhSHb...</dsig:SignatureValue>
  -<dsig:KeyInfo>
    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus>oRUTUiTQk...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
    </dsig:KeyInfo>
  </dsig:Signature>
  -<details>
    <timeOfIssue>2001-11-05T12:00:00</timeOfIssue>
  </details>
</issuer>
</license>

```

The following [license](#) shows [grants](#) to registrants, non-registrants, and Geoffrey Smith.

[grants](#) to registrants, non-registrants, and Geoffrey Smith.

```

-<license>
  -<inventory>
    -<cx:digitalWork licensePartId="HiResLecture">
      -<cx:metadata>
        -<xml>
          -<rdf:RDF>
            -<rdf:Description>
              <dc:title>Earthquake Engineering 210</dc:title>
              <dc:identifier>2001-09-21</dc:identifier>
              <dc:format>mpeg/video; resolution 1024x768</dc:format>
              <dc:creator>Peter Anselmo</dc:creator>
              <dc:publisher>Georgia Institute of Technology. Continuing Education Department</dc:publisher>
            </rdf:Description>
          </rdf:RDF>
        </xml>
      </cx:metadata>
    -<cx:locator>
      <nonSecureIndirect URI="http://www.gatech.edu/lectures/ee-210-high-resolution"/>
    </cx:locator>
  </cx:digitalWork>
  -<cx:digitalWork licensePartId="LoResLecture">
    -<cx:metadata>
      -<xml>
        -<rdf:RDF>
          -<rdf:Description>
            <dc:title>Earthquake Engineering 210</dc:title>
            <dc:identifier>2001-09-21</dc:identifier>
            <dc:format>mpeg/video; resolution 640X480</dc:format>
            <dc:creator>Peter Anselmo</dc:creator>
            <dc:publisher>Georgia Institute of Technology. Continuing Education Department</dc:publisher>
          </rdf:Description>
        </rdf:RDF>
      </xml>
    </cx:metadata>
  -<cx:locator>
    <nonSecureIndirect URI="http://www.gatech.edu/lectures/ee-210-low-resolution"/>
  </cx:locator>
</cx:digitalWork>
  -<keyHolder licensePartId="trustedIssuer">
    -<info>
      -<dsig:KeyValue>
        -<dsig:RSAKeyValue>
          <dsig:Modulus>X0j9q90Ax...</dsig:Modulus>
          <dsig:Exponent>AQABAA==</dsig:Exponent>
        </dsig:RSAKeyValue>
      </dsig:KeyValue>
    </info>
  </keyHolder>
</license>

```

```

    </dsig:RSAKeyValue>
  </dsig:KeyValue>
</info>
</keyHolder>
-<forall varName="ta">
  -<everyone>
    <sx:commonName>Geoffrey Smith</sx:commonName>
    -<trustedIssuer>
      -<keyHolder licensePartIdRef="trustedIssuer">
        </keyHolder>
      </trustedIssuer>
    </everyone>
  -<everyone>
    -<school:physicalSecurityLevel>
      <cx:value>4</cx:value>
    </school:physicalSecurityLevel>
    -<trustedIssuer>
      -<keyHolder licensePartIdRef="trustedIssuer">
        </keyHolder>
      </trustedIssuer>
    </everyone>
  -<everyone>
    -<school:trustedStorageSecurityLevel>
      <cx:value>5</cx:value>
    </school:trustedStorageSecurityLevel>
    -<trustedIssuer>
      -<keyHolder licensePartIdRef="trustedIssuer">
        </keyHolder>
      </trustedIssuer>
    </everyone>
  -<everyone>
    -<school:protocolLevelSecurityLevel>
      <cx:value>4</cx:value>
    </school:protocolLevelSecurityLevel>
    -<trustedIssuer>
      -<keyHolder licensePartIdRef="trustedIssuer">
        </keyHolder>
      </trustedIssuer>
    </everyone>
  -<everyone>
    -<school:kernelSecurityLevel>
      <cx:value>5</cx:value>
    </school:kernelSecurityLevel>
    -<trustedIssuer>
      -<keyHolder licensePartIdRef="trustedIssuer">
        </keyHolder>
      </trustedIssuer>
    </everyone>
</forall>
-<validityInterval licensePartId="validPeriod">
  <notBefore>2001-01-05T00:00:00</notBefore>
  <notAfter>2001-04-25T00:00:00</notAfter>
</validityInterval>
</inventory>
-<grant>
  -<forall varName="registrant">
    -<everyone>
      -<library:identification>
        <library:scheme>http://www.gatech.edu/registration</library:scheme>
        <library:value>student</library:value>
      </library:identification>
      -<trustedIssuer>
        -<keyHolder licensePartIdRef="trustedIssuer">
          </keyHolder>
        </trustedIssuer>
      </everyone>
    </forall>
  -<keyHolder varRef="registrant">
    </keyHolder>
    <cx:play/>
    <cx:digitalWork licensePartIdRef="HiResLecture"/>
    <validityInterval licensePartIdRef="validPeriod"/>
  </grant>
-<grant>
  -<forall varName="everyone">
    </forall>
  -<keyHolder varRef="everyone">
    </keyHolder>
    <cx:play/>
    <cx:digitalWork licensePartIdRef="LoResLecture"/>
  -<allConditions>
    <validityInterval licensePartIdRef="validPeriod"/>
  -<sx:fee>
    -<sx:paymentMetered>
      <sx:rate currency="USD">10.00</sx:rate>
      <sx:per>PT1H</sx:per>
      <sx:by>PT15M</sx:by>
      <sx:phase>PT10M</sx:phase>
    </sx:paymentMetered>
  -<sx:to>
    -<sx:aba>
      <sx:institution>139371581</sx:institution>

```

```

    <sx:account>111111</sx:account>
  </sx:aba>
</sx:to>
</sx:fee>
</allConditions>
</grant>
-<grantGroup>
  -<keyHolder varRef="ta">
    </keyHolder>
    <validityInterval licensePartIdRef="validPeriod"/>
  -<grant>
    <cx:play/>
    <cx:digitalWork licensePartIdRef="HiResLecture"/>
  </grant>
  -<grant>
    <cx:copy/>
    <cx:digitalWork licensePartIdRef="HiResLecture"/>
  </grant>
  -<grant>
    <cx:edit/>
    <cx:digitalWork licensePartIdRef="HiResLecture"/>
  </grant>
  -<grant>
    <cx:manageFolder/>
    -<cx:digitalWork>
      -<cx:locator>
        <nonSecureIndirect URI="http://www.gatech.edu/lectures/"/>
      </cx:locator>
    </cx:digitalWork>
  </grant>
  -<grant>
    <cx:accessFolderInfo/>
    -<cx:digitalWork>
      -<cx:locator>
        <nonSecureIndirect URI="http://www.gatech.edu/lectures/"/>
      </cx:locator>
    </cx:digitalWork>
  </grant>
  -<grant>
    <cx:backup/>
    <cx:digitalWork licensePartIdRef="HiResLecture"/>
  </grant>
</grantGroup>
-<issuer>
  -<dsig:Signature>
    -<dsig:SignedInfo>
      <dsig:CanonicalizationMethod Algorithm="http://www.w3.org/TR/2001/REC-xml-c14n-20010315"/>
      <dsig:SignatureMethod Algorithm="http://www.w3.org/2000/09/xmldsig#rsa-sha1"/>
      -<dsig:Reference>
        -<dsig:Transforms>
          <dsig:Transform Algorithm="http://www.xml.org/schema/2001/11/xrml2core#license"/>
        </dsig:Transforms>
        <dsig:DigestMethod Algorithm="http://www.w3.org/2000/09/xmldsig#sha1"/>
        <dsig:DigestValue>PB4QbK0QC0941tTExbj1/Q==</dsig:DigestValue>
      </dsig:Reference>
    </dsig:SignedInfo>
    <dsig:SignatureValue>AYmq0hSHb...</dsig:SignatureValue>
  -<dsig:KeyInfo>
    -<dsig:KeyValue>
      -<dsig:RSAKeyValue>
        <dsig:Modulus>YPNnae05g...</dsig:Modulus>
        <dsig:Exponent>AQABAA==</dsig:Exponent>
      </dsig:RSAKeyValue>
    </dsig:KeyValue>
  </dsig:KeyInfo>
</dsig:Signature>
-<details>
  <timeOfIssue>2001-01-01T04:03:02</timeOfIssue>
</details>
</issuer>
</license>

```

5.2 Screen Saver Preview and Superdistribution (ftp://dvbftp.dvb2000@ftp.dvb.org/dvb-cpt/CfP%20Responses/DVB-CPT-711r1_0.pdf)

This scenario is simple and is based on the initial purchase of a screen saver by User A. User A is so happy with his purchase that he forwards a preview copy to his friend User B. User B agrees with his friend's opinion and decides he wants to buy a full version of the screen saver.

User A can use the screen saver; anyone can preview the screen saver one time or pay to use it

```

-<license>
  -<inventory>
    -<keyHolder licensePartId="UserA">
      -<info>
        -<dsig:KeyValue>
          -<dsig:RSAKeyValue>
            <dsig:Modulus>p8sN4KeeR...</dsig:Modulus>

```

```

        <dsig:Exponent>AQABAA==</dsig:Exponent>
    </dsig:RSAKeyValue>
</dsig:KeyValue>
</info>
</keyHolder>
-<cx:digitalWork licensePartId="saverTurkey">
  -<cx:locator>
    <nonSecureIndirect URI="http://www.download.com/saverTurkey.exe" />
  </cx:locator>
</cx:digitalWork>
</inventory>
-<grant>
  -<keyHolder licensePartIdRef="UserA">
    </keyHolder>
    <cx:execute/>
    <cx:digitalWork licensePartIdRef="saverTurkey" />
  -<sx:fee>
    -<sx:paymentFlat>
      <sx:rate currency="USD">2.00</sx:rate>
    -<sx:paymentRecord>
      -<sx:stateReference>
        -<uddi>
          -<serviceKey>
            <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
          </serviceKey>
        </uddi>
      </sx:stateReference>
    </sx:paymentRecord>
  </sx:paymentFlat>
  -<sx:to>
    -<sx:aba>
      <sx:institution>222371864</sx:institution>
      <sx:account>123457</sx:account>
    </sx:aba>
  </sx:to>
</sx:fee>
</grant>
-<grant>
  -<forAll varName="anyone">
    </forAll>
    <principal varRef="anyone" />
    <obtain/>
  -<grantGroup licensePartId="superdistributedGrants">
    -<forAll varName="anyone">
      </forAll>
      <principal varRef="anyone" />
    -<grant>
      <cx:execute/>
      <cx:digitalWork licensePartIdRef="saverTurkey" />
    -<sx:fee>
      -<sx:paymentFlat>
        <sx:rate currency="USD">2.00</sx:rate>
      -<sx:paymentRecord>
        -<sx:stateReference>
          -<uddi>
            -<serviceKey>
              <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
            </serviceKey>
          </uddi>
        </sx:stateReference>
      </sx:paymentRecord>
    </sx:paymentFlat>
    -<sx:to>
      -<sx:aba>
        <sx:institution>222371864</sx:institution>
        <sx:account>123457</sx:account>
      </sx:aba>
    </sx:to>
  </sx:fee>
</grant>
  -<grant>
    <cx:execute/>
    <cx:digitalWork licensePartIdRef="saverTurkey" />
  -<allConditions>
    -<sx:trackQuery>
      -<sx:stateReference>
        -<uddi>
          -<serviceKey>
            <uuid>D04951E4-332C-4693-B7DB-D3D1D1C20844</uuid>
          </serviceKey>
        </uddi>
      </sx:stateReference>
      <sx:notMoreThan>1</sx:notMoreThan>
    </sx:trackQuery>
    -<sx:trackReport>
      -<sx:stateReference>
        -<uddi>
          -<serviceKey>
            <uuid>1F8903B0-FC03-4c5b-A445-AAFCCEC01111</uuid>
          </serviceKey>
        </uddi>
      -<serviceParameters>

```

```
-<datum>
  <cx:print/>
</datum>
</serviceParameters>
</sx:stateReference>
</sx:trackReport>
</allConditions>
</grant>
</grantGroup>
</grant>
</license>
```