XACML Intellectual Property Control (IPC) Profile Version 1.0

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Related work:
This specification is related to:
• eXtensible Access Control Markup Language (XACML) Version 3.0. Edited by Erik Rissanen.

Abstract:
This specification defines a profile for the use of XACML in expressing policies for intellectual property control (IPC). It defines standard attribute identifiers useful in such policies, and recommends attribute value ranges for certain attributes.
Status:

This document was last revised or approved by the membership of OASIS on the above date. The level of approval is also listed above. Check the “Latest version” location noted above for possible later revisions of this document. Any other numbered Versions and other technical work produced by the Technical Committee (TC) are listed at https://www.oasis-open.org/committees/tc_home.php?wg_abbrev=xacml#technical.

TC members should send comments on this specification to the TC’s email list. Others should send comments to the TC’s public comment list, after subscribing to it by following the instructions at the “Send A Comment” button on the TC’s web page at https://www.oasis-open.org/committees/xacml/.

For information on whether any patents have been disclosed that may be essential to implementing this specification, and any offers of patent licensing terms, please refer to the Intellectual Property Rights section of the Technical Committee web page (https://www.oasis-open.org/committees/xacml_ipr.php).

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1 Introduction

{Non-normative}

This specification defines a profile for the use of the OASIS eXtensible Access Control Markup Language (XACML) [XACML3] to write and enforce policies for the purpose of providing access control for resources deemed intellectual property (hereinafter referred to as IP). Use of this profile requires no changes or extensions to the [XACML3] standard.

This specification begins with a non-normative discussion of the topics and terms of interest in this profile. The normative section of the specification describes the attributes defined by this profile and provides recommended usage patterns for attribute values.

This specification assumes the reader is somewhat familiar with XACML. A brief overview sufficient to understand these examples is available in [XACMLIntro].

For our purposes, IP may be defined as legal property rights over mental creations. IP owners can receive exclusive rights to their creations, if certain conditions are met. These exclusive rights can be exploited by the owner for profit, either directly through sales of products, or indirectly through licensing. IP is an asset; perhaps the most valuable asset an organization has. IP can be licensed to other organizations in cases of outsourcing and/or to generate revenue from IP sharing arrangements.

IP value tends to increase when properly protected, though there are differing points of diminishing returns. IP protection doesn’t guarantee security; it just provides a compensation mechanism for cases of unlawful exploitation. IP valuation and protection are often criteria for venture capital investors.

Broadly speaking, there are four main categories of intellectual property: copyrights, trademarks, trade secrets, and patents. Copyrights confer time-limited exclusive rights of ownership and/or use to the creator of the work. A copyright is typically used to protect artistic works such as photographs, music, books, etc. Copyrights are internationally recognized, though there are differences in the terms and enforcement. When copyright protection and status ends, resources are said to become public domain.

Trademarks are the IP protection scheme of names, logos, symbols, products, etc. For example, in the U.S. there are 2 main types:

• For general usage, or for not-yet-registered trademarks ™
• For trademarks registered with the USPTO ®

Trademarks are also internationally recognized through the Madrid system, which requires registration through the World Intellectual Property Organization (WIPO), a United Nations agency. The World Trade Organization also sets legal minimum standards for IP protection among member nations.

Patents are property rights granted to an inventor to prevent others from profiting from the invention for a limited time in exchange for public disclosure of the invention when the patent is granted. Patents apply to processes, machines, articles of manufacture, or composition of matter (including biological), or derived innovations. Patents require detailed disclosure of information, designs, processes, etc. Patents are administered in U.S. by the USPTO, and are internationally recognized by WTO TRIPS, WIPO, and European Patent Convention. When patent protection and status ends, resources are said to become public domain.

Trade secrets are IP protection of formulae, processes, designs, information, etc. that are not easily obtainable that a business uses for competitive advantage. They are often protected by legal contracts such as non-disclosure agreements, non-compete agreements, or proprietary information agreements.

Trade secrets are the most common form of industrial IP protection, and outnumber patents. However, trade secrets are most often categorized as “proprietary” information, and may not be discovered as trade secrets unless litigated. They are not federally protected in the U.S., though most states have adopted the Uniform Trade Secrets Act. However, theft of trade secrets is prohibited by U.S. Economic Espionage Act of 1996. Trade secret status requires less disclosure than patents. Trade secrets are well protected by European Patent Convention as “know how”. No international treaties protect trade secrets, though WTO TRIPS, GATT, and NAFTA have provisions for trade secret protection.
Other IP related concepts, such as public domain and proprietary will be defined in the glossary section.

The attributes and glossary terms defined below are not an exclusive or comprehensive list of all the attributes that may be required for rendering authorization decisions concerning IP. For example, PDPs would have to evaluate other entitlements, such as group membership, from PIPs (Policy Information Points). This profile is meant as a point of reference for implementing IP controls, and may be extended as needed for organizational purposes. Software vendors who choose to implement this profile should take the attributes herein as a framework for IP controls, but allow individual implementers some flexibility in constructing their own XACML-based authorization policies and PDPs.

Organizations not only create and use intellectual property, but they also often grant rights and/or license their IP to other organizations for a variety of reasons. Companies often license copyrighted, patented, and proprietary information to sub-contractors to provide goods or services in return. The information may be exchanged under several types of legal agreements, e.g., proprietary information agreements or patent grants. Also, organizations may grant the use of their trademarks to other businesses or non-profit institutions via trademark grants. These legal documents which grant rights to IP resources to others generally require that the licensed IP is protected. Thus, the agreements form the basis of access control policies, which can be expressed in XACML.

The goals of this profile are to create a framework of common IP-related attributes upon which authorization decisions can be rendered, and to promote federated authorization for access to IP resources. This profile will also provide XACML software developers and access control policy authors guidance on supporting IP use cases.

1.1 Glossary

Agreement identifier
A name, number, or other alphanumeric designator for referencing legal agreements which grant IP access.

Agreement type
The type of legal agreement which grants access to IP resources. Language granting rights to IP resources can be embedded in a number of different types of agreements. This profile includes URNs for the most common types: non-disclosure agreements, proprietary information agreements, technical data grants, patent grants, trademark grants, cross-licensing grants, and royalty-bearing.

Authorized end use
The specific authorized end uses to which the IP resource may be applied, in accordance with the IP agreement. This attribute represents a vocabulary of verbs or nominalizations that define the end-use activities appropriate for the work effort. Examples may include (but are not limited to): design, manufacture, and maintenance.

Business context
The type of organization to which a subject may belong. This profile lists a number of common affiliation types, including customer, supplier, partner, non-profit, government, primary contractor, sub-contractor, joint development, and authorized sub-licensor. In cases of joint development, organizations should agree on which resources were developed and by whom prior to the execution of the agreement (background IP), and determine rights and ownership of resources developed as a result of the agreement (foreground IP). The authorized sub-licensor value denotes organizations that have rights to sub-license resources that are granted by the IP-Owner.

Copyright
A form of limited and temporary government-granted monopoly which gives the creator of an original work some rights for a certain time period in relation to that work, including its publication, distribution and adaptation; after which time the work is said to enter the public domain. Copyright applies to concrete expressions of information, but not the information itself.
Covered resource

A resource that is named, described, or implied in an IP agreement as being covered or included in the terms of the agreement.

Covered subject

A subject that is named, described, or implied in an IP agreement as being covered or included in the terms of the agreement. (For example, a person who has an organizational affiliation with a party to an agreement might be a covered subject of the agreement.)

Effective date

The date on which an intellectual property license takes effect, thereby implying access for authorized purposes.

Expiration date

The date on which an intellectual property license expires, thereby terminating access.

IP-Licensee

A person or entity that has been designated (directly or indirectly) by the IP-Owner to have certain rights to a particular IP resource.

IP-Owner

A designation for the person or entity that owns the intellectual property.

Marking

A visual indicator added to physical instances of intellectual property assets that provides policy and/or procedural guidance.

Organization

A company or other legal entity of which a person can be an employee or agent.

Patent

A set of exclusive rights granted by a government to an inventor or his/her assignee for a limited period of time in exchange for a disclosure of an invention.

Proprietary

Information developed by an organization for competitive advantage. “Proprietary” is used synonymously with “trade secret”. For this reason, this profile identifies trade secrets and related terms such as confidential as “proprietary”.

Public domain

Information that has been demoted from copyright, trademark, trade secret, or patented status. No intellectual property controls are usually necessary for items considered public domain.

Subject-ID

Element specifies the principal that is the subject of the request context. May include users, devices, or applications.

Subject-to-Organization-Relationship

The organizational relationship of the subject’s organization (identified by the organization attribute) to the organization that owns the IP resource. Examples include “employee” and “contractor”.

Third-party proprietary

Intellectual property which has been legally entrusted to the care and use of another organization. To promote clarity, this profile utilizes the “Proprietary” resource attribute in conjunction with the “IP-Owner” resource attribute to express this concept.
Trademark

A distinctive sign or indicator used by an individual, business organization, or other legal entity to identify that the products and/or services to consumers with which the trademark appears originate from a unique source of origin, and to distinguish its products or services from those of other entities.

Trade secret

A formula, practice, process, design, instrument, pattern, or compilation of information which is not generally known or reasonably ascertainable, by which a business can obtain an economic advantage over competitors or customers. In some jurisdictions, such secrets are designated as "confidential", "limited distribution", or "restricted". Used synonymously with "Proprietary".

Work effort

This attribute can be used to indicate the specific work effort, statement of work, project, or program which is associated with the IP resource. This attribute provides additional granularity to limit access to users within organizations to those with a specific need to know for a given work effort.

1.2 Terminology

The key words "MUST", "MUST NOT", "REQUIRED", "SHALL", "SHALL NOT", "SHOULD", "SHOULD NOT", "RECOMMENDED", "MAY", and "OPTIONAL" in this document are to be interpreted as described in [RFC2119].

1.3 Normative References


1.4 Non-Normative References


1.5 Scope

Many intellectual property access control decisions can be made on the basis of the resource’s copyright, trademark, patent, proprietary (trade secret), or other classification. This profile defines standard XACML attributes for these properties, and recommends the use of standardized attribute values.

In practice, an organization’s intellectual property protection policies will be a mixture of rules derived from legal agreements, along with enterprise-specific policies and government regulations.

1.6 Use cases

PDPs (Policy Decision Points) may need to consider intellectual property protection schemes when evaluating authorization decisions. This profile is designed to provide a framework of additional <Attributes> for such decisions.

Refer to Figure 1 for an illustration of a typical scenario in which IP protection is a concern.

Figure 1 Typical IP scenario (Organization names are fictional.)

The goal of this profile is to support the creation of interoperable XACML policies that permit and deny access as intended by the prevailing business rules. One such rule might be: “If the subject’s organization matches the resource’s IP-Owner, then Permit.” Another might be “If the subject and resource are covered by the same agreement-id, then Permit.”

The conditions that determine IP access include properties and relationships of entities remotely related to the subjects and resources involved in an IP transaction. XACML relies on data-valued attributes directly attached to subjects and resource. Therefore, the complex object structure representing the real world must be condensed to data values of attributes in the XACML categories. For example, a XACML request context for a subject might have organization="999999" and agreement-identifier="CR-101". In this case, one particular attribute of the organization object representing "Acme Inc." has been selected to fill the XACML IPC subject:organization attribute value. Multiple object relationships from subjects to "IP Agreement" may exist, and would be telescoped into the single string value, depicted as "IP Agreement", of the subject:agreement-id attribute. This “flattening” process is somewhat arbitrary; however, it must not introduce ambiguity, and may be influenced by
performance or implementation considerations. Some of the attributes specified in this profile represent
some such flattening process, and assume the existence of some types of remote objects that may not be
represented directly in an XACML context.

1.7 Disclaimer

NOTHING IN THIS PROFILE IS INTENDED TO BE A LEGALLY CORRECT INTERPRETATION OR
APPLICATION OF U.S. OR ANY GOVERNMENT INTELLECTUAL PROPERTY LAWS OR
REGULATIONS. USE OF THIS PROFILE IN AN ACCESS CONTROL SYSTEM DOES NOT
CONSTITUTE COMPLIANCE WITH ANY INTELLECTUAL PROPERTY PROTECTION
REQUIREMENTS, REGULATIONS, OR RESTRICTIONS. THIS PROFILE HAS NOT BEEN REVIEWED
OR ENDORSED BY THE U.S. OR ANY OTHER GOVERNMENT AGENCIES RESPONSIBLE FOR
ENFORCING INTELLECTUAL PROPERTY LAWS, NOR BY ANY LEGAL EXPERT IN THIS FIELD.
Organizations that use this profile should ensure their intellectual property protection by engaging
qualified professional legal services.
2 Profile

2.1 Resource Attributes

Information objects may contain more than one type of intellectual property. Therefore, it is possible that information objects may have more than one IP type categorization: copyright, patent, proprietary, public domain, or trademark. In cases where information objects have more than one true value for the IP type resource attributes, policy authors may utilize policies and policy sets with the appropriate combining algorithms to determine which policies take precedence in the evaluation process. A table listing IP type categorization overlaps is provided in Appendix B.

2.1.1 Copyright

The Copyright value shall be designated with the following attribute identifier:

```
urn:oasis:names:tc:xacml:3.0:ipc:resource:copyright
```

The DataType of this attribute is `http://www.w3.org/2001/XMLSchema#boolean`. This attribute denotes whether the resource is designated as the intellectual property type “copyright”.

2.1.2 Patent

The Patent value shall be designated with the following attribute identifier:

```
urn:oasis:names:tc:xacml:3.0:ipc:resource:patent
```

The DataType of this attribute is `http://www.w3.org/2001/XMLSchema#boolean`. This attribute denotes whether the resource is designated as the intellectual property type “patent”.

2.1.3 Proprietary

The Proprietary value shall be designated with the following attribute identifier:

```
urn:oasis:names:tc:xacml:3.0:ipc:resource:proprietary
```

The DataType of this attribute is `http://www.w3.org/2001/XMLSchema#boolean`. This attribute denotes whether the resource is designated as the intellectual property type “proprietary”.

2.1.4 Public-Domain

The Public-Domain value shall be designated with the following attribute identifier:

```
urn:oasis:names:tc:xacml:3.0:ipc:resource:public-domain
```

The DataType of this attribute is `http://www.w3.org/2001/XMLSchema#boolean`. This attribute denotes whether the resource is designated as the intellectual property type “public domain”.

2.1.5 Trademark

The Trademark value shall be designated with the following attribute identifier:

```
urn:oasis:names:tc:xacml:3.0:ipc:resource:trademark
```

The DataType of this attribute is `http://www.w3.org/2001/XMLSchema#boolean`. This attribute denotes whether the resource is designated as the intellectual property type “trademark”.

2.1.6 IP-Owner

IP-Owner classification values shall be designated with the following attribute identifier:

```
urn:oasis:names:tc:xacml:3.0:ipc:resource:ip-owner
```
The **DataType** of this attribute is [http://www.w3.org/2001/XMLSchema#string](http://www.w3.org/2001/XMLSchema#string). This attribute names the owner of the IP. A common scheme such as DUNS SHOULD be used to promote interoperability. The range of values for this attribute SHOULD be similar to that of the IP-Licensee and Organization resource attributes.

### 2.1.7 IP-Licensee

IP-Licensee classification values shall be designated with the following attribute identifier:

```
urn:oasis:names:tc:xacml:3.0:ipc:resource:ip-licensee
```

The **DataType** of this attribute is [http://www.w3.org/2001/XMLSchema#string](http://www.w3.org/2001/XMLSchema#string). This attribute names the designated custodian of the IP. A common scheme such as DUNS SHOULD be used to promote interoperability. The range of values for this attribute SHOULD be similar to that of the IP-Owner and Organization resource attributes.

### 2.1.8 Agreement-Type

Agreement-Type classification values shall be designated with the following attribute identifier:

```
urn:oasis:names:tc:xacml:3.0:ipc:resource:agreement-type
```

The **DataType** of this attribute is [http://www.w3.org/2001/XMLSchema#anyURI](http://www.w3.org/2001/XMLSchema#anyURI). This attribute can be used to indicate whether or not a specific resource is governed by a particular license arrangement. The range of URN values of this attribute SHALL be:

```
urn:oasis:names:tc:xacml:3.0:ipc:resource:agreement-type:non-disclosure-agreement
urn:oasis:names:tc:xacml:3.0:ipc:resource:agreement-type:proprietary-information-agreement
urn:oasis:names:tc:xacml:3.0:ipc:resource:agreement-type:copyright-grant
urn:oasis:names:tc:xacml:3.0:ipc:resource:agreement-type:patent-grant
urn:oasis:names:tc:xacml:3.0:ipc:resource:agreement-type:trademark-grant
urn:oasis:names:tc:xacml:3.0:ipc:resource:agreement-type:cross-licensing-grant
```

### 2.1.9 Agreement-Id

The business document representing the IP agreement that covers this resource shall be designated with the following attribute identifier.

```
urn:oasis:names:tc:xacml:3.0:ipc:resource:agreement-id
```

The **DataType** of this attribute is [http://www.w3.org/2001/XMLSchema#string](http://www.w3.org/2001/XMLSchema#string). One scenario in which this attribute can be used is in the case where one or more resource documents are *tagged* with metadata associated with the resource and one such tag represents the agreement id. In this scenario it is assumed that there is only one agreement that covers those resources. An alternative scenario is to let the policy determine the appropriate agreement associated with the resource authorization request. In this alternative scenario the resource agreement-id attribute would not be used in the XACML request.
2.1.10 Valid-Agreement-Exists

The indicator in which a business document representing the IP agreement that covers this resource exists shall be designated with the following attribute identifier:

```
urn:oasis:names:tc:xacml:3.0:ipc:resource:valid-agreement-exists
```

The **DataType** of this attribute is `http://www.w3.org/2001/XMLSchema#boolean`.

One scenario in which this attribute can be used is in the case where a PEP indicates whether or not an agreement exists. In this scenario it is assumed that the determination on whether an agreement exists occurs before the authorization request is sent to a PDP. An alternative scenario is to let the PDP determine if the appropriate agreement, associated with the resource authorization request, exits via an attribute query to a PIP. In this alternative scenario the resource valid-agreement-exists attribute would not be used in the XACML request.

2.1.11 Number-Of-Valid-Agreements

The number of business documents representing the IP agreement that covers this resource shall be designated with the following attribute identifier:

```
```

The **DataType** of this attribute is `http://www.w3.org/2001/XMLSchema#integer`.

Although this attribute can be used in the case where a PEP indicates the number of agreements that exist in the authorization request; a more likely scenario is to let the PDP determine the number of agreements, associated with the resource authorization request, that exits via an attribute query to a PIP. In this alternative scenario the resource number-of-valid-agreements attribute would not be used in the XACML request.

2.1.12 Work-Effort

Work-effort values shall be designated with the following attribute identifier:

```
urn:oasis:names:tc:xacml:3.0:ipc:resource:work-effort
```

The **DataType** of this attribute is `http://www.w3.org/2001/XMLSchema#string`.

This attribute can be used to indicate the specific work effort, statement of work, project, or program which is associated with the IP resource. This attribute provides additional granularity to limit access to users within organizations to those with a specific need to know for a given work effort.

2.1.13 Authorized-End-Use

Authorized-end-use values shall be designated with the following attribute identifier:

```
urn:oasis:names:tc:xacml:3.0:ipc:resource:authorized-end-use
```

The **DataType** of this attribute is `http://www.w3.org/2001/XMLSchema#anyURI`.

This attribute can be used to indicate the specific authorized end uses to which the IP resource may be applied, in accordance with the IP agreement. This attribute represents a vocabulary of verbs or nominalizations that define the end-use activities appropriate for the work effort. Examples may include (but are not limited to): design, manufacture, and maintenance.

The range of URN values of this attribute SHALL be

```
urn:oasis:names:tc:xacml:3.0:ipc:resource:authorized-end-use:design
urn:oasis:names:tc:xacml:3.0:ipc:resource:authorized-end-use:manufacture
urn:oasis:names:tc:xacml:3.0:ipc:resource:authorized-end-use:maintenance
```
2.1.14 **Effective-Date**

Effective-date values shall be designated with the following attribute identifier:

```
urn:oasis:names:tc:xacml:3.0:ipc:resource:effective-date
```

The **DataType** of this attribute is `http://www.w3.org/2001/XMLSchema#date`.

This attribute can be used to indicate the date and time in which an intellectual property license takes effect, thereby implying access for authorized purposes. This attribute may also convey the date and time in which other resource attributes become valid; for example, when a copyright or patent is granted.

2.1.15 **Expiration-Date**

Expiration-date values shall be designated with the following attribute identifier:

```
urn:oasis:names:tc:xacml:3.0:ipc:resource:expiration-date
```

The **DataType** of this attribute is `http://www.w3.org/2001/XMLSchema#date`.

The date and time in which an intellectual property license expires, thereby terminating access. This attribute may also convey the date and time in which other resource attribute elements are no longer valid; for example, when a copyright or patent expires.

2.2 **Subject Attributes**

2.2.1 **Subject-ID**

Subject-ID classification values shall be designated with the following attribute identifier:

```
urn:oasis:names:tc:xacml:3.0:ipc:subject:subject-id
```

The **DataType** of this attribute is `http://www.w3.org/2001/XMLSchema#string`.

This is the identifier for the subject, which may include user identifiers, machine identifiers, and/or application identifiers.

2.2.2 **Organization**

Organization classification values shall be designated with the following attribute identifier:

```
urn:oasis:names:tc:xacml:3.0:ipc:subject:organization
```

The **DataType** of this attribute is `http://www.w3.org/2001/XMLSchema#string`.

Organization shall denote the organization with which the subject in the request is affiliated. More specifically, this attribute should denote the organization or organizations that have a controlling interest in the subject’s intellectual property rights and responsibilities with respect to the current request. A common scheme such as DUNS SHOULD be used to promote interoperability. Whichever range of values is chosen, it should coincide with the range of IP-Owner and IP-Licensee.

2.2.3 **Business-Context**

The business context of the subject’s organization (identified by the `organization` attribute) to the organization that owns the resource (identified by the `ip-owner` attribute) SHALL be designated with the following attribute identifier:

```
urn:oasis:names:tc:xacml:3.0:ipc:subject:business-context
```

The **DataType** of this attribute is `http://www.w3.org/2001/XMLSchema#anyURI`.

Recommended URN values for this attribute are:

This profile does not specify how to interpret the meaning of multiple values of `business-context` in a request context containing multiple values of `organization` or `ip-owner`.

### 2.2.4 Subject-To-Organization-Relationship

This attribute identifies the type of affiliation that the subject of the request has with the organization identified by the `organization` attribute. Subject-to-organization-relationship classification values shall be designated with the following attribute identifier:

```
```

The `DataType` of this attribute is `http://www.w3.org/2001/XMLSchema#anyURI`.

Implementers can create sub-categories of `Subject-to-organization-relationship` to represent roles or functions within their organizations. Some recommended values of the attribute SHALL be:


A request context may contain multiple values for this attribute; however, this profile does not specify how to interpret the meaning of multiple values of `subject-to-organization-relationship` in a request context containing multiple values of `organization`.

### 2.2.5 Agreement-Id

The business document representing the IP agreement that covers this subject shall be designated with the following attribute identifier.

```
urn:oasis:names:tc:xacml:3.0:ipc:subject:agreement-id
```

The `DataType` of this attribute is `http://www.w3.org/2001/XMLSchema#string`.

### 2.3 Obligations

The `<Obligation>` element will be used in the XACML response to notify requestor that additional processing requirements are needed. This profile focuses on the use of obligations to encryption and visual marking. The XACML response may contain one or more obligations. Processing of an obligation is application specific. An `<Obligation>` may contain the object (resource) action pairing information. If multiple vocabularies are used for resource definitions the origin of the vocabulary MUST be identified.

The obligation should conform to following structure:

```
urn:oasis:names:tc:xacml:3.0:ipc:obligation
```

#### 2.3.1 Encrypt

The Encrypt obligation shall be designated with the following identifier:

```
urn:oasis:names:tc:xacml:3.0:ipc:obligation:encrypt
```

The encrypt obligation can be used to command PEPs (Policy Enforcement Points) to encrypt the resource. This profile does not specify the type of encryption or other parameters to be used; rather, the details of implementation are left to the discretion of policy authors and software developers as to how to best meet their individual requirements.
The following is an example of the Encrypt obligation:

```xml
<ObligationExpressions>
  <ObligationExpression
    ObligationId="urn:oasis:names:tc:xacml:3.0:ipc:obligation:encrypt"
    FulfillOn="Permit"/>
</ObligationExpressions>
```

### 2.3.2 Marking

Marking classification values shall be designated with the following identifier:

```
urn:oasis:names:tc:xacml:3.0:ipc:obligation:marking
```

The marking obligation can be used to command PEPs (Policy Enforcement Points) to embed visual marks, sometimes called watermarks, on data viewed both on-screen and in printed form. Policy authors may use this obligation to meet legal or contractual requirements by forcing PEPs to display text or graphics in accordance with <Permit> decisions. This profile does not specify the text or graphics which can be rendered; rather, the details of implementation are left to the discretion of policy authors as to how to best meet their individual requirements.

The following is an example of the marking obligation:

```xml
<ObligationExpressions>
  <ObligationExpression
    ObligationId="urn:oasis:names:tc:xacml:3.0:ipc:obligation:marking"
    FulfillOn="Permit">
    <AttributeAssignmentExpression
      AttributeId="urn:oasis:names:tc:xacml:3.0:example:attribute:text">
      <AttributeValue
        DataType="http://www.w3.org/2001/XMLSchema#string">
        Copyright 2011 Acme</AttributeValue>
    </AttributeAssignmentExpression>
  </ObligationExpression>
</ObligationExpressions>
```
3 Identifiers

This profile defines the following URN identifiers.

3.1 Profile Identifier

The following identifier SHALL be used as the identifier for this profile when an identifier in the form of a URI is required.

```
urn:oasis:names:tc:xacml:3.0:ipc
```
4 Examples (non-normative)

This section contains examples of how the profile attributes can be used.

4.1 Copyright

This example illustrates the use of a copyright for the following scenario:

ip-owner (Acme) grants ip-licensee (Wiley Corp) the right to use copyrighted materials (software, images, multimedia) for a limited time in exchange for fees. ip-licensee must protect licensed material from unauthorized usage.

<table>
<thead>
<tr>
<th>Subject attributes</th>
<th>Resource attributes</th>
<th>Obligations</th>
</tr>
</thead>
<tbody>
<tr>
<td>organization: Wiley Corp</td>
<td>copyright: true</td>
<td>encrypt</td>
</tr>
<tr>
<td>agreement-id: CR101</td>
<td>ip-owner: Acme</td>
<td>marking: Copyright 2011 Acme</td>
</tr>
<tr>
<td></td>
<td>ip-licensee: Wiley Corp</td>
<td></td>
</tr>
<tr>
<td></td>
<td>agreement-type: copyright-grant</td>
<td></td>
</tr>
<tr>
<td></td>
<td>agreement-id: CR101</td>
<td></td>
</tr>
<tr>
<td></td>
<td>effective-date: 2011-07-01T00:00:00</td>
<td></td>
</tr>
<tr>
<td></td>
<td>expiration-date: 2021-06-30T00:00:00</td>
<td></td>
</tr>
</tbody>
</table>

4.1.1 Copyright Request

```xml
<Request ReturnPolicyIdList="true"
    CombinedDecision="false"
    xmlns="urn:oasis:names:tc:xacml:3.0:core:schema:wd-17">
    <Attributes Category="urn:oasis:names:tc:xacml:1.0:subject-category:access-subject">
        <Attribute AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:subject:organization"
            IncludeInResult="true">
            <AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">Wiley Corp</AttributeValue>
        </Attribute>
        <Attribute AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:subject:agreement-id"
            IncludeInResult="true">
            <AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">CR101</AttributeValue>
        </Attribute>
    </Attributes>
    <Attributes Category="urn:oasis:names:tc:xacml:3.0:attribute-category:resource">
        <Attribute AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:resource:copyright"
            IncludeInResult="true">
            <AttributeValue DataType="http://www.w3.org/2001/XMLSchema#boolean">true</AttributeValue>
        </Attribute>
        <Attribute AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:resource:ip-owner"
            IncludeInResult="true">
            <AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">Acme</AttributeValue>
        </Attribute>
        <Attribute AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:resource:ip-licensee"
            IncludeInResult="true">
            <AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">Wiley Corp</AttributeValue>
        </Attribute>
    </Attributes>
</Request>
```
4.1.2 Copyright Policy

This policy can be summarized as follows:

**Target:** This policy is only applicable to resource type copyright
AND the agreement-type copyright-grant

**Rule:** This rule is only applicable if Resource ip-owner = Acme
Then if
Subject organization = Wiley Corp AND
Subject agreement-id = Resource agreement-id (CR101, in this case) AND
Resource ip-licensee = Wiley Corp AND
"Date and Time" is in the range of effective-date and expiration-date
Then PERMIT

**Obligation:**
On PERMIT mark AND encrypt the resource.
<Policy xmlns="urn:oasis:names:tc:xacml:3.0:core:schema:wd-17"
  PolicyId="copyright-approve"
  RuleCombiningAlgId="urn:oasis:names:tc:xacml:1.0:rule-combining-algorithm:deny-overrides"
  Version="1">
  <Description>Example copyright material policy</Description>
  <Target>
    <AnyOf>
      <AllOf>
        <Match MatchId="urn:oasis:names:tc:xacml:1.0:function:boolean-equal">
          <AttributeValue DataType="http://www.w3.org/2001/XMLSchema#boolean">
            true
          </AttributeValue>
        </Match>
        <Match MatchId="urn:oasis:names:tc:xacml:1.0:function:anyURI-equal">
          <AttributeValue DataType="http://www.w3.org/2001/XMLSchema#anyURI">
            urn:oasis:names:tc:xacml:3.0:ipc:resource:agreement-type:copyright-grant
          </AttributeValue>
        </Match>
      </AllOf>
    </AnyOf>
  </Target>
  <Rule Effect="Permit" RuleId="Right_to_use_copyrighted_material_match">
    <Description>Allow if subject's association to the designated custodian of the copyright agrees</Description>
    <Target>
      <AnyOf>
        <AllOf>
          <Match MatchId="urn:oasis:names:tc:xacml:1.0:function:string-equal">
            <AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">
              Acme
            </AttributeValue>
          </Match>
          <Match MatchId="urn:oasis:names:tc:xacml:1.0:function:string-one-and-only">
            <AttributeDesignator
              AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:resource:ip-owner"
              Category="urn:oasis:names:tc:xacml:3.0:attribute-category:resource"
              DataType="http://www.w3.org/2001/XMLSchema#anyURI"
              MustBePresent="false"/>
          </Match>
        </AllOf>
      </AnyOf>
    </Target>
    <Condition>
      <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:and">
        <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:string-equal">
          <AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">
            Wiley Corp
          </AttributeValue>
        </Apply>
      </Apply>
    </Condition>
  </Rule>
</Policy>
<Apply FunctionId="urn:oasis:names:tc:xacml:3.0:function:string-equal">
  <AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">Wiley Corp</AttributeValue>
</Apply>

<Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:string-one-and-only">
  <AttributeDesignator
    AttributeId="urn:oasis:names:tc:xacml:3.0:resource:ip-licensee"
    Category="urn:oasis:names:tc:xacml:3.0:attribute-category:resource"
    DataType="http://www.w3.org/2001/XMLSchema#string"
    MustBePresent="false"/>
</Apply>

<Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:string-one-and-only">
  <AttributeDesignator
    AttributeId="urn:oasis:names:tc:xacml:3.0:resource:effective-date"
    Category="urn:oasis:names:tc:xacml:3.0:attribute-category:resource"
    DataType="http://www.w3.org/2001/XMLSchema#dateTime"
    MustBePresent="false"/>
</Apply>

<Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:string-one-and-only">
  <AttributeDesignator
    AttributeId="urn:oasis:names:tc:xacml:3.0:resource:expiration-date"
    Category="urn:oasis:names:tc:xacml:3.0:attribute-category:resource"
    DataType="http://www.w3.org/2001/XMLSchema#dateTime"
    MustBePresent="false"/>
</Apply>

<Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:dateTime-greater-than-or-equal">
  <AttributeDesignator
    AttributeId="urn:oasis:names:tc:xacml:1.0:environment:current-dateTime"
    Category="urn:oasis:names:tc:xacml:3.0:attribute-category:environment"
    DataType="http://www.w3.org/2001/XMLSchema#dateTime"
    MustBePresent="false"/>
</Apply>

<Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:dateTime-one-and-only">
  <AttributeDesignator
    AttributeId="urn:oasis:names:tc:xacml:1.0:environment:current-dateTime"
    Category="urn:oasis:names:tc:xacml:3.0:attribute-category:environment"
    DataType="http://www.w3.org/2001/XMLSchema#dateTime"
    MustBePresent="false"/>
</Apply>

<Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:dateTime-one-and-only">
  <AttributeDesignator
    AttributeId="urn:oasis:names:tc:xacml:3.0:resource:expiration-date"
    Category="urn:oasis:names:tc:xacml:3.0:attribute-category:resource"
    DataType="http://www.w3.org/2001/XMLSchema#dateTime"
    MustBePresent="false"/>
</Apply>

<Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:dateTime-less-than">
  <AttributeDesignator
    AttributeId="urn:oasis:names:tc:xacml:1.0:environment:current-dateTime"
    Category="urn:oasis:names:tc:xacml:3.0:attribute-category:environment"
    DataType="http://www.w3.org/2001/XMLSchema#dateTime"
    MustBePresent="false"/>
</Apply>

<Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:dateTime-one-and-only">
  <AttributeDesignator
    AttributeId="urn:oasis:names:tc:xacml:1.0:environment:current-dateTime"
    Category="urn:oasis:names:tc:xacml:3.0:attribute-category:environment"
    DataType="http://www.w3.org/2001/XMLSchema#dateTime"
    MustBePresent="false"/>
</Apply>

<Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:dateTime-one-and-only">
  <AttributeDesignator
    AttributeId="urn:oasis:names:tc:xacml:3.0:resource:effective-date"
    Category="urn:oasis:names:tc:xacml:3.0:attribute-category:resource"
    DataType="http://www.w3.org/2001/XMLSchema#dateTime"
    MustBePresent="false"/>
</Apply>

<Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:dateTime-one-and-only">
  <AttributeDesignator
    AttributeId="urn:oasis:names:tc:xacml:3.0:resource:expiration-date"
    Category="urn:oasis:names:tc:xacml:3.0:attribute-category:resource"
    DataType="http://www.w3.org/2001/XMLSchema#dateTime"
    MustBePresent="false"/>
</Apply>
4.2 Trademark

This example illustrates the use of a trademark for the following scenario:

ip-owner (Acme) grants ip-licensee (Wiley Foundation), a charitable organization, the right to use their trademark logo for a limited time. ip-licensee must protect licensed material from unauthorized usage.

<table>
<thead>
<tr>
<th>Subject attributes</th>
<th>Resource attributes</th>
<th>Obligations</th>
</tr>
</thead>
<tbody>
<tr>
<td>organization: Wiley Foundation</td>
<td>trademark: true</td>
<td>Marking: Acme</td>
</tr>
<tr>
<td>agreement-id: CR102</td>
<td>ip-owner: Acme</td>
<td></td>
</tr>
<tr>
<td>ip-licensee: Wiley Foundation</td>
<td></td>
<td></td>
</tr>
<tr>
<td>agreement-type: trademark-grant</td>
<td></td>
<td></td>
</tr>
<tr>
<td>agreement-id: CR102</td>
<td></td>
<td></td>
</tr>
<tr>
<td>effective-date: 2011-07-01T00:00:00</td>
<td></td>
<td></td>
</tr>
<tr>
<td>expiration-date: 2021-06-30T00:00:00</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

4.2.1 Trademark Request

```xml
<Request ReturnPolicyIdList="true"
xmlns="urn:oasis:names:tc:xacml:3.0:core:schema:wd-17">
<Attributes Category="urn:oasis:names:tc:xacml:1.0:subject-category:access-subject">
  <Attribute AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:subject:organization"
     IncludeInResult="true">
    Wiley Foundation
  </Attribute>
  <Attribute AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:subject:agreement-id"
     IncludeInResult="true">
    CR102
  </Attribute>
</Attributes>
<Attributes Category="urn:oasis:names:tc:xacml:3.0:attribute-category:resource">
  <Attribute AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:resource:trademark"
     IncludeInResult="true">
    true
  </Attribute>
  <Attribute AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:resource:ip-owner"
     IncludeInResult="true">
    Acme
  </Attribute>
  <Attribute AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:resource:ip-licensee"
     IncludeInResult="true">
    Wiley Corp
  </Attribute>
  <Attribute AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:resource:agreement-type"
     IncludeInResult="true">
    trademark-grant
  </Attribute>
  <Attribute AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:resource:agreement-id"
     IncludeInResult="true">
    CR102
  </Attribute>
  <Attribute AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:resource:effective-date"
     IncludeInResult="true">
    2011-07-01T00:00:00
  </Attribute>
  <Attribute AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:resource:expiration-date"
     IncludeInResult="true">
    2021-06-30T00:00:00
  </Attribute>
</Attributes>
```

xacml-3.0-ipc-v1.0-os-en
Standards Track Work Product Copyright © OASIS Open 2015. All Rights Reserved.
4.2.2 Trademark Policy

This policy can be summarized as follows:

**Target:** This policy is only applicable to resource type “trademark” AND ip-owner = “Acme”

**Rule:** This rule is only applicable if Subject organization = Wiley Foundation

Then if

- Subject agreement-id = Resource agreement-id (CR102, in this case) AND
- “Date and Time” is in the range of effective-date and expiration-date THEN

PERMIT

**Obligation:**

On PERMIT mark the resource.
<Target>
  <AnyOf>
    <AllOf>
      <Match MatchId="urn:oasis:names:tc:xacml:1.0:function:string-equal">
        <AttributeValue DataValue="Wiley Foundation"/>
      </Match>
      <AttributeDesignator
        AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:subject:organization"
        Category="urn:oasis:names:tc:xacml:1.0:category:access-subject"
        DataType="http://www.w3.org/2001/XMLSchema#string"
        MustBePresent="false"/>
    </AllOf>
  </AnyOf>
  </Target>
</Condition>

<Condition>
  <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:string-equal">
    <VariableReference VariableId="acme-agreement-id"/>
    <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:string-one-and-only">
      <AttributeDesignator
        AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:subject:agreement-id"
        Category="urn:oasis:names:tc:xacml:1.0:category:access-subject"
        DataType="http://www.w3.org/2001/XMLSchema#string"
        MustBePresent="false"/>
    </Apply>
  </Apply>
  <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:string-equal">
    <VariableReference VariableId="acme-agreement-id"/>
    <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:string-one-and-only">
      <AttributeDesignator
        AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:resource:agreement-id"
        Category="urn:oasis:names:tc:xacml:3.0:attribute-category:resource"
        DataType="http://www.w3.org/2001/XMLSchema#string"
        MustBePresent="false"/>
    </Apply>
  </Apply>
  <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:dateTime-greater-than-or-equal">
    <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:dateTime-one-and-only">
      <AttributeDesignator
        AttributeId="urn:oasis:names:tc:xacml:1.0:environment:current dateTime"
        Category="urn:oasis:names:tc:xacml:3.0:attribute-category:environment"
        DataType="http://www.w3.org/2001/XMLSchema#dateTime"
        MustBePresent="false"/>
    </Apply>
    <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:dateTime-one-and-only">
      <AttributeDesignator
        AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:resource:effective-date"
        Category="urn:oasis:names:tc:xacml:3.0:attribute-category:resource"
        DataType="http://www.w3.org/2001/XMLSchema#dateTime"
        MustBePresent="false"/>
    </Apply>
  </Apply>
  <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:dateTime-less-than">
    <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:dateTime-one-and-only">
      <AttributeDesignator
        AttributeId="urn:oasis:names:tc:xacml:1.0:environment:current dateTime"
        Category="urn:oasis:names:tc:xacml:3.0:attribute-category:environment"
        DataType="http://www.w3.org/2001/XMLSchema#dateTime"
        MustBePresent="false"/>
    </Apply>
    <Apply FunctionId="urn:oasis:names:tc:xacml:1.0:function:dateTime-one-and-only">
      <AttributeDesignator
        AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:resource:expiration-date"
        Category="urn:oasis:names:tc:xacml:3.0:attribute-category:resource"
        DataType="http://www.w3.org/2001/XMLSchema#dateTime"
        MustBePresent="false"/>
    </Apply>
  </Apply>
</Condition>
4.3 Proprietary

This example illustrates the use of a trade secret for the following scenario:

*ip-owner (Acme) grants ip-licensee (Wiley Corp) the right to use Acme trade secrets, technical drawings in this case, for a limited time for creation of products sold to ip-owner. ip-licensee and ip-owner must protect licensed material from unauthorized usage.*

<table>
<thead>
<tr>
<th>Subject attributes</th>
<th>Resource attributes</th>
<th>Obligations</th>
</tr>
</thead>
<tbody>
<tr>
<td>organization: Wiley Corp</td>
<td>proprietary: true</td>
<td>encrypt</td>
</tr>
</tbody>
</table>
| subject-to-organization-relationship: supplier | ip-owner: Acme | marking: Acme  
Proprietary Information: Limited Distribution |
| agreement-id: CR103        | ip-licensee: Wiley Corp   |                              |
| agreement-type: technical-data-grant | valid-agreement-exists: true |
| agreement-id: CR103        | work-effort: Acme Products|                              |
| authorized-end-use: manufacture |                         |                              |

4.3.1 Proprietary Request

```xml
<Request ReturnPolicyIdList="true" CombinedDecision="false"
 xmlns="urn:oasis:names:tc:xacml:3.0:core:schema:wd-17">
 <Attributes Category="urn:oasis:names:tc:xacml:1.0:subject-category:access-subject">
  <Attribute
   AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:subject:agreement-id"
   IncludeInResult="true">
   <AttributeValue
    DataType="http://www.w3.org/2001/XMLSchema#string" CR103</AttributeValue>
  </Attribute>
  <Attribute
   AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:subject:organization"
   IncludeInResult="true">
   <AttributeValue
    DataType="http://www.w3.org/2001/XMLSchema#string">Wiley Corp</AttributeValue>
  </Attribute>
  <Attribute
   AttributeId="urn:oasis:names:tc:xacml:3.0:ipc:subject:subject-to-organization-relationship"
   IncludeInResult="true">
   <AttributeValue
    DataType="http://www.w3.org/2001/XMLSchema#anyURI"></AttributeValue>
  </Attribute>
 </Attributes>
</Request>
```
4.3.2 Proprietary Policy

This policy can be summarized as follows:

Target: This policy is only applicable to resource type “proprietary” AND ip-owner = Acme

Rule: This rule is only applicable if valid-agreement-exists

Then if

Subject agreement-id= Resource agreement-id (CR103, in this case)

Then PERMIT
Obligation:
On PERMIT mark AND encrypt the resource.

* Note: The PDP determines if a valid agreement exits via an attribute query to a PIP.
Category="urn:oasis:names:tc:xacml:3.0:attribute-category:resource"
DataType="http://www.w3.org/2001/XMLSchema#string"
MustBePresent="false"/>
</Apply>
</Condition>
</Rule>
</ObligationExpressions>
<ObligationExpression
ObligationId="urn:oasis:names:tc:xacml:3.0:ipc:obligation:marking"
FulfillOn="Permit">
<AttributeAssignmentExpression
AttributeId="urn:oasis:names:tc:xacml:3.0:example:attribute:text">
<AttributeValue DataType="http://www.w3.org/2001/XMLSchema#string">
>Acme Proprietary Information: Limited Distribution</AttributeValue>
</AttributeAssignmentExpression>
</ObligationExpression>
</ObligationExpressions>
</ObligationExpression>
</ObligationExpressions>
</Policy>
## 5 Conformance

Conformance to this profile is defined for **policies** and **requests** generated and transmitted within and between XACML systems.

### 5.1 Attribute Identifiers

Conformant XACML **policies** and **requests** SHALL use the attribute identifiers defined in Section 2 for their specified purpose and SHALL NOT use any other identifiers for the purposes defined by attributes in this profile. The following table lists the attributes that must be supported.

Note: "M" is mandatory "O" is optional.

<table>
<thead>
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5.2 Attribute Values

Conformant XACML policies and requests SHALL use attribute values in the specified range or patterns as defined for each attribute in Section 2 (when a range or pattern is specified).

NOTE: In order to process conformant XACML policies and requests correctly, PIP and PEP modules may have to translate native data values into the datatypes and formats specified in this profile.
Appendix A. Acknowledgements

The following individuals have participated in the creation of this specification and are gratefully acknowledged:

**Participants:**
- John Tolbert, The Boeing Company
- Crystal Hayes, The Boeing Company
- Richard Hill, The Boeing Company
- Paul Tyson, Bell Helicopter Textron
- Danny Thorpe, Quest Software
- Remon Sinnema, EMC
- Andy Han, Nexlabs Inc
- Erik Rissanen, Axiomatics AB
- David Brossard, Axiomatics AB

**Committee members during profile development:**

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<thead>
<tr>
<th>Person</th>
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<th>Role</th>
</tr>
</thead>
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<tr>
<td>David Brossard</td>
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<td>Voting Member</td>
</tr>
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<td>Rakesh</td>
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<tr>
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<td>Sridhar Muppidi</td>
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Nataraj Nagaratnam IBM  Member
Gregory Neven IBM  Member
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David Choy Individual  Member
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Naomaru Itoi NextLabs, Inc.  Member
Kamalendu Biswas Oracle  Member
Willem de Pater Oracle  Member
Subbu Devulapalli Oracle  Member
Rich Levinson Oracle  Secretary
Hal Lockhart Oracle  Chair
Sid Mishra Oracle  Member
Prateek Mishra Oracle  Member
Roger Wigenstam Oracle  Member
YanJiong WANG Primeton Technologies, Inc.  Member
Danny Thorpe Quest Software  Voting Member
Kenneth Peeples Red Hat  Member
Anil Saldhana Red Hat  Member
Appendix B. Non-Normative Text

This table maps possible overlaps between IP type classifications. This list is neither normative nor exhaustive, but serves as a guide for interoperable implementations.

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# Appendix C. Revision History

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<td>John Tolbert</td>
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<td>WD 2</td>
<td>2/25/2010</td>
<td>John Tolbert</td>
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<td>CD 2</td>
<td>5/5/2010</td>
<td>John Tolbert</td>
<td>Revised committee draft, fixed links and formatting.</td>
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| WD 3     | 8/9/2011   | John Tolbert/Crystal Hayes | Added resource attributes for “Effective Date”, “Expiration Date”, and “Use Restrictions”;  
|          |            |                          | changed text for “License”; updated membership list.                        |
| WD 4     | 9/7/2011   | Paul Tyson, with response by John Tolbert and Crystal Hayes | Removed PII and Nationality from glossary.  
|          |            |                          | Removed Nationality as a subject attribute.  
|          |            |                          | Changed “License” to “Agreement”. Added resource and subject attributes for “IP Agreement”.  
|          |            |                          | Removed “Use Restrictions” and “Authority” from resource attributes. Moved “Encryption Type”, “Marking”, and “Disposal” to Obligations.  
|          |            |                          | Posed additional questions and comments for consideration.                  |
| WD 5     | 10/13/2011 | John Tolbert/Richard Hill | Removed all action attributes. Added “Affiliation Type” as a subject attribute.  
|          |            |                          | Removed “Disposal” as an obligation.  
|          |            |                          | Changed “Organization” to “Organizational-Affiliation”. Added sample policies.  |
| WD 6     | 11/16/2011 | John Tolbert, Richard Hill, Crystal Hayes, and Paul Tyson | Removed IP-Type and IP-Data, replaced with individual URNs. Added text to introduction and glossary.  
|          |            |                          | Incorporated Paul Tyson’s changes from edited WD-05.                         |
| WD 7     | 1/29/2012  | John Tolbert, Richard Hill, Crystal Hayes, Paul Tyson, David Brossard, Danny Thorpe, Remon Sinnema | Added URNs for “Affiliation-Type” and “Agreement-Type”. Added new subject attribute values with URNs for “Organizational-relationship” and “Organization-Type”.  
|          |            |                          | Changed DataType of “Effective-Date” and “Expiration-Date” from date to dateTime.  
|          |            |                          | Changed some attribute descriptions. Fixed typographical errors. Changed (Updated) examples.  |
| WD 8     | 4/30/2012  | John Tolbert, Richard Hill, Andy Han, Erik Rissanen | Changed attribute name “Organizational-Affiliation” to “Organization”. Added additional guidance to descriptions to section 2.1 “Resource Attributes”, section 2.1.9 “Agreement-Id”, section 2.2.4 “Affiliation-Type”.  
|          |            |                          | Removed "profiles" from obligation urn.                                      |
examples. Updated examples; moved some rule target matches to the rule’s condition section.