BS ISO/IEC 19770-3:2016

BSI Standards Publication

Information technology — IT asset management

Part 3: Entitlement schema

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National foreword

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Information technology — IT asset management —

Part 3: Entitlement schema

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Foreword

ISO (the International Organization for Standardization) and IEC (the International Electrotechnical Commission) form the specialized system for worldwide standardization. National bodies that are members of ISO or IEC participate in the development of International Standards through technical committees established by the respective organization to deal with particular fields of technical activity. ISO and IEC technical committees collaborate in fields of mutual interest. Other international organizations, governmental and non-governmental, in liaison with ISO and IEC, also take part in the work. In the field of information technology, ISO and IEC have established a joint technical committee, ISO/IEC JTC 1.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of document should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO and IEC shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/IEC JTC 1, *Information technology*, SC 7, *Software and systems engineering*.

ISO/IEC 19770 consists of the following parts, under the general title *Information technology — Software asset management*:

— *Part 1: Processes and tiered assessment of conformance*

— *Part 2: Software identification tag*

— *Part 3: Entitlement schema*

— *Part 5: Overview and vocabulary*

The following part is under preparation:

— *Part 4: Resource Utilization Measurement (RUM)*

The following part is planned:

— *Part 22: Guidance for the use of ISO/IEC 19770-2 Software IdentificationTag information in Cyber Security*

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Introduction

This part of ISO/IEC 19770 provides a technical definition of a schema that can encapsulate the details of software entitlements, including usage rights, limitations and metrics.

The primary intentions of this part of ISO/IEC 19770 are

a) to provide a basis for common terminology to be used when describing entitlement rights, limitations and metrics, and

b) to provide a schema which allows effective description of rights, limitations and metrics attaching to a software license.

The specific information provided by an entitlement schema (Ent) may be used to help ensure compliance with license rights and limits, to optimize license usage and to control costs. Though Ent creators are encouraged to provide the data that allow for the automatic processing, it is not mandated that data be automatically measurable. The data structure is intended to be capable of containing any kind of terms and conditions included in a software license agreement.

This part of ISO/IEC 19770 supports software asset management (SAM) processes as defined in ISO/IEC 19770-1. It is also designed to work together with software identification tags as defined in ISO/IEC 19770-2. Standardization in the field of software entitlements provides uniform, measurable data for both the license compliance, and license optimization, processes of SAM practice.

This part of ISO/IEC 19770 does not provide requirements or recommendations for processes related to software asset management or Ents. The software asset management processes are within the scope of ISO/IEC 19770-1.

This part of ISO/IEC 19770 has been developed with the following practical principles in mind.

— **Maximum possible usability with legacy entitlement information**. The Ent or software entitlement schema, is intended to provide the maximum possible usability with existing entitlement information, including all historical licensing transactions. While the specifications provide many opportunities for improvement in entitlement processes and practices, they should also able to handle existing licensing transactions without imposing requirements which would prevent such transactions being codified into Ent records.

— **Maximum possible alignment with** ISO/IEC 19770-2. This part of ISO/IEC 19770 (entitlement schema) is intended to align closely with part ISO/IEC 19770-2 (software identification tags). This should facilitate both understanding and their joint use.

It is intended that this standardized schema will be of benefit to all stakeholders involved in the creation, licensing, distribution, release, installation and ongoing management of software and software entitlements.

— Benefits to software licensors who provide Ents include, but are not limited to:

  — immediate software consumer recognition of details of the usage rights derived from their software entitlement;

  — ability to specify details to customers that allow software assets to be measured and reported for license compliance purposes;

  — increased awareness of software license compliance issues on the part of end-customers;

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  - improved software consumer relationships through quicker and more effective license compliance audits.

- Benefits to SAM tool providers, deployment tool providers, resellers, resellers, software packagers and release managers include, but are not limited to:
  - receipt of consistent and uniform data from software licensors and Ent creators;
  - more consistent and structured entitlement information, supporting the use of automated techniques to determine the need for remediation of software licensing;
  - improved reporting from additional categorization made possible by the use of Ents;
  - improved SAM tool entitlement reconciliation capabilities resulting from standardization in location and format of software entitlement data;
  - ability to deliver value added functionality for compliance management through the consumption of entitlement data.

- The benefits for software consumers, SAM practitioners, IT support professionals and end-users include, but are not limited to:
  - receipt of consistent and uniform data from software licensors, resellers and SAM tools providers;
  - more consistent and structured entitlement information supporting the use of automated techniques to determine the need for remediation of software licensing;
  - improved reporting from additional categorization made possible by the use of Ents;
  - improved SAM and software license compliance capabilities stemming from standardized, software licensor-supplied, ISO/IEC 19770-2 software identification tags to reconcile with these Ents;
  - improved ability to avoid software license under-procurement or over-procurement with subsequent cost optimization;
  - standardized usage across multiple platforms, rendering heterogeneous computing environments more manageable.

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Information technology — IT asset management —

Part 3: Entitlement schema

1 Scope

This part of ISO/IEC 19770 establishes a set of terms and definitions which may be used when discussing software entitlements (an important part of software licenses). It also provides specifications for a transport format which enables the digital encapsulation of software entitlements, including associated metrics and their management.

This common set of terms and associated transport format is intended to facilitate the management of software entitlements. The intended benefits of the better management of entitlements include easier demonstration of proof of ownership, cost optimization of the use of entitlements and easier license compliance management.

Furthermore, one of the benefits of having a standard for entitlement structure is that it may encourage the normalization by industry of names for and the details of, different types of entitlements. A common lexicon is critical to standardization and shared understanding. The terms in this part of ISO/IEC 19770 should form a part of that lexicon over time.

It should be noted that within this text, attributes of an XML entity will be denoted with angle brackets, <attribute>. XML elements are noted with quotes, “Element”.

This part of ISO/IEC 19770 deals only with software entitlements, which are defined as the subset of software licenses that are concerned with usage rights. It is expected that the original documentation of licensing terms and conditions will be definitive for legal purposes, and will always take precedence over the Ent encapsulation.

This part of ISO/IEC 19770 does not detail ITAM processes required for discovery and management of software (which is provided for in ISO/IEC 19770-1) or software identification tags (as defined by ISO/IEC 19770-2).

This part of ISO/IEC 19770 does not consider identifying mechanisms for product activation.

This part of ISO/IEC 19770 is not intended to conflict with any organization’s policies, procedures and standards, or with any national laws and regulations. Any such conflict should be resolved before using this part of ISO/IEC 19770. In case the conflict cannot be resolved, the specification shall not be implemented.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 19770-2, *Information technology — Software asset management — Part 2: Software identification tag*

ISO/IEC 19770-5, *Information technology — IT asset management — Part 5: Overview and vocabulary*

RFC 3986, *Uniform Resource Identifier (URI): Generic Syntax*[1)]

1) https://www.ietf.org/rfc/rfc3986.txt

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3 Terms, definitions and abbreviated terms

For the purposes of this document, the following terms and definitions apply.

3.1 Key concept terms and definitions

3.1.1
allocation of an entitlement
process of assigning some or all of a given entitlement to a subsidiary or other associated organizational unit which manages its own Ent library

Note 1 to entry: The Ent enables the recording of entitlement allocations. See Allocations (5.3.4).

3.1.2
bundle
grouping of products which is the result of a marketing/licensing strategy to sell entitlements to multiple products as one purchased item

Note 1 to entry: A bundle can be referred to as a "suite", if the products are closely related and typically integrated (such as an office suite containing a spreadsheet, word processor, presentation and other related items).

Note 2 to entry: Bundles can also refer to software titles that are less closely related such as a game, a virus scanner and a utility "bundled" together with a new computer, or to groups of entitlements, such as multiple entitlements for a backup software product.

[SOURCE: ISO/IEC 19770-5, 3.5]

3.1.3
channel
distribution channel
approach to distributing products and services from the original supplier to the end-user organization

Note 1 to entry: Typical channels for software include direct, VAR, OEM, reseller, and educational reseller. Organizations which are included in the channel, but which are not the original supplier or end-user organization, are typically called *channel partner* (3.1.4).

3.1.4
channel partner
person or entity working with a software licensor or another person/entity within the *channel* (3.1.3) who facilitates the sale of software to the end-user

Note 1 to entry: Channel partners may be referred to by names such as reseller, vendor and original equipment manufacturer (OEM).

3.1.5
consolidation of an entitlement
process of combining 2 or more entitlements into a single, unified entitlement

Note 1 to entry: Entitlements may be consolidated to simplify understanding of the current position or as the result of a licensor negotiation. The Ent enables the recording of entitlement consolidations. See 5.3.6 (Consolidations).

3.1.6
customer
organization or person that receives a product or service

[SOURCE: ISO/IEC 19770-5, 3.10]

3.1.7
downgrade right
right granted to receive, install, and/or use an installation of a previous version of software than the currently granted entitlement

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3.1.8
element
component of an XML document or part of the Ent schema that provides information related to the entitlement represented by the Ent

[SOURCE: ISO/IEC 19770-5, 3.12, modified]

3.1.9
end-user
person or persons who will ultimately be using the system for its intended purpose

[SOURCE: ISO/IEC 19770-5, 3.13]

3.1.10
Ent creator
entity that initially creates an Ent

Note 1 to entry: This entity can be part of the organization that created or published the software to which the Ent relates, in which case the Ent creator and software creator will be the same. The Ent creator can also be a separate organization which holds the licensing rights or even a third party organization unrelated to the software creator (such as in the case where Ents are created for legacy software by a consultant or tool developer).

3.1.11
entitlement schema
software entitlement schema
Ent
information structure containing a digital encapsulation of a licensing transaction and its associated entitlement information

Note 1 to entry: A single transaction does not necessarily encapsulate a full (or effective) entitlement. An effective entitlement may need to be determined by an analysis of multiple licensing transactions, of a full license and then of upgrades and/or maintenance transactions assessed together with it.

3.1.12
Ent library
construct which holds data about multiple Ents

Note 1 to entry: The Ent library is typically a database, but could also be a file or other data storage mechanism.

3.1.13
extensible markup language
XML
license-free and platform-independent markup language that carries rules for generating text formats that contain structured data

[SOURCE: W3C Recommendation *Extensible Markup Language (XML) 1,1 (Second Edition)*, 1,2]

3.1.14
initial Ent
Ent that is referenced by later Ents

Note 1 to entry: The initial Ent is typically a record of the first transaction between software licensor and end customer. An initial Ent is a type of *primary Ent* (3.1.19)

3.1.15
license model
class of licenses with common characteristics

Note 1 to entry: Examples of license models can be site license, OEM license and per-computer.

[SOURCE: ISO/IEC 19770-5]

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3.1.16
limit
restriction on rights or privileges granted by a software entitlement

3.1.17
original equipment manufacturer license
OEM license
license for products or components that are created or manufactured by one company and licensed by another company

3.1.18
perpetual license
license for a software entitlement granted in perpetuity

Note 1 to entry: The alternative to a perpetual license is a term or *subscription-based license* (3.1.39).

3.1.19
primary Ent
Ent which encapsulates basic information about an entitlement

Note 1 to entry: Primary Ents have an <entType> of "Initial", "Consolidation", "AllocationReceived", or "TransferReceived". These are base Ents which allow for initial population of an Ent into an Ent library (with the exception of "Consolidation" which may be used to replace several previous Ents if desired). Other Ents (called supplemental Ents) can extend the data in these base type Ents.

3.1.20
release
collection of one or more new or changed configuration items deployed into the live environment as a result of one or more changes

[SOURCE: ISO/IEC 19770-5, 3.28]

3.1.21
revocation
process of revoking an entitlement or Ent

Note 1 to entry: An entitlement may sometimes be revoked by the organization which originally issued it and the Ent enables the recording of entitlement revocations. Specific Ent transactions may also be revoked, to correct errors or record the rescinding of entitlement allocations. See 5.3.7 (Renovations).

3.1.22
right
privilege or benefit granted by a software entitlement

3.1.23
registration identifier
regid
identifier created from a domain name (see Reference [7]) and the date when the domain was owned by a specific individual or organization, allowing an individual or organization to have their own unique namespace and be their own registration authority for all software configuration items they publish without requiring a separate industry based registration authority

[SOURCE: ISO/IEC 19770-5, 3.27]

3.1.24
SAM practitioner
individual involved in the practice or role of managing software assets

Note 1 to entry: A SAM practitioner is often involved in the collection or reconciliation of software inventory and/or software entitlements.

[SOURCE: ISO/IEC 19770-5, 3.31]

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3.1.25
SAM tool
software used to assist in and automate parts of the process of management of software assets

3.1.26
software
all or part of the programs, procedures, rules, and associated documentation of an information processing system

Note 1 to entry: There are multiple definitions of software in use. For the purpose of this part of ISO/IEC 19770, it is typically important to include both executable and non-executable software, such as fonts, graphics, audio and video recordings, templates, dictionaries, documents and information structures, such as database records.

[SOURCE: ISO/IEC 24765:2010, 3.34]

3.1.27
software asset management
SAM
control and protection of software and related assets within an organization, and control and protection of information about related assets which are needed in order to control and protect software assets

Note 1 to entry: For reference, a corresponding industry definition is "all of the infrastructure and processes necessary for the effective management, control and protection of the software assets within an organization, throughout all stages of their lifecycle".

[SOURCE: ISO/IEC 19770-5, 3.35]

3.1.28
software creator
person or organization that creates a software product or package

Note 1 to entry: This entity might or might not own the rights to sell or distribute the software.

[SOURCE: ISO/IEC 19770-5, 3.38]

3.1.29
software entitlement
entitlement
software license use rights as defined through agreements between a software licensor and a software consumer

Note 1 to entry: Effective use rights take into account any contracts and all applicable licenses, including full licenses, upgrade licenses and maintenance agreements.

[SOURCE: ISO/IEC 19770-5, 3.39]

3.1.30
software entitlement reconciliation
process of comparing software entitlements owned with those required (granted and deployed), usually to determine compliance with software license agreements

3.1.31
software identification tag
-2 tag
SWID tag
SWID
set of structured data elements containing authoritative identification information about a software configuration item

[SOURCE: ISO/IEC 19770-2, 3.40]

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3.1.32
software license
legal rights to use software in accordance with terms and conditions specified by the software licensor

Note 1 to entry: "Using a software product" can include: accessing, copying, distributing, installing and executing the software product, depending on the license's terms and conditions.

[SOURCE: ISO/IEC 19770-5, 3.41]

3.1.33
software licensee
person or organization granted a license to use a specific software product

3.1.34
software licensor
person or organization who is authorized to issue a software license for a specific software package

[SOURCE: ISO/IEC 19770-5, 3.43]

3.1.35
software maintenance
entitlement of additional rights (such as additional functionality, upgrade or support) for a previously granted software entitlement

3.1.36
software package
complete and documented set of software supplied for a specific application or function

Note 1 to entry: Note to entry: In the ISO/IEC 19770 family of standards, the term software package refers to the set of files associated with a specific set of business functionality that can be installed on a computing device and has a set of specific licensing requirements. In the ISO/IEC 19770 family of standards, the terms "product" and "software package" are used synonymously depending on the context of the item described.

[SOURCE: ISO/IEC 19770-5, 3.44]

3.1.37
software product
complete set of software designed for delivery to a software consumer or end-user that may contain computer programs, procedures and associated documentation and data

Note 1 to entry: In the ISO/IEC 19770 family of standards, the terms "software product" and "software package" are used interchangeably depending on the context of the item described.

[SOURCE: ISO/IEC 19770-5, 3.46]

3.1.38
stock keeping unit
SKU
identification, usually alphanumeric, of a particular product that allows it to be tracked for inventory and software entitlement purposes

Note 1 to entry: The term "stock keeping unit" is traditionally associated with physical goods. In the sense of licenses it refers to a unique identifier, sometimes also called "part number".

Note 2 to entry: The term "stock keeping unit" is typically associated with unique products for sales purposes, such as software entitlements. It may not correspond uniquely to specific software products, but may instead represent packages of software, and/or specific terms and conditions related to software products, such as whether it relates to a full product, upgrade product, or maintenance on an existing product.

[SOURCE: ISO/IEC 19770-1, 3.48]

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3.1.39
subscription-based license
term-based license
service-based license
license for an entitlement that is for a limited amount of time

Note 1 to entry: This type of license shall be renewed to remain in force. Specifically it is not a perpetual license.

3.1.40
supplemental Ent
Ent which has an <entType> of "Supplemental"

Note 1 to entry: Supplemental Ents provide extended information about a primary Ent and are linked to primary Ents by the <linkedToPrimaryEntId> attribute.

3.1.41
transfer of an entitlement
process of assigning a given entitlement to a separate legal entity

Note 1 to entry: The Ent enables the recording of entitlement transfers (see 5.3.5). Transfers shall be done in accordance with the contractual terms and conditions between the software licensor and end-user.

Note 2 to entry: Transfers often occurs when a large organization divests a part of itself into a separate legal entity.

3.1.42
XML schema definition
XSD
language that describes the structure of XML information

[SOURCE: ISO/IEC 19770-5, 3.2.35]

3.2 Abbreviated terms and acronyms

Ent	software entitlement schema, entitlement schema
GUID	globally unique identifier
OEM	original equipment manufacturer
regid	registration identifier
SAM	software asset management
SKU	stock keeping unit
UNSP-SC	united nations standard products and services code
URI	uniform resource identifier
URL	uniform resource locator
W3C	World Wide Web Consortium
XML	extensible markup language
XSD	XML schema document

4 Conformance

4.1 Overview

Conformance to this part of ISO/IEC 19770 may apply to a product or an organization. For organizational conformance, the scope defined shall cover both the organizational scope, as well as the products that are included in scope.

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If a claim of conformance is made for a product or organization, the claim shall specify the scope for which conformance was tested.

4.2 Product conformance

4.2.1 Product scope

There shall be a clear statement for product scope describing the software products to which a statement of conformance applies.

4.2.2 Product conformance

Full conformance for a product shall be achieved by supplying each licensed software consumer with an appropriate Ent that meets the requirements of this part of ISO/IEC 19770, for the product specified within the scope.

4.2.3 Software vendor Ent conformance

Full conformance for a software vendor that provides Ents shall be achieved by demonstrating that all Ents provided comply with all mandatory requirements of this part of ISO/IEC 19770.

4.2.4 Ent tool conformance

Full conformance for a product that uses, creates, or modifies Ents is achieved by demonstrating that all Ents used or created by the tool comply with all mandatory requirements of this part of ISO/IEC 19770.

4.3 Organizational conformance

4.3.1 Organizational scope

There shall be a clear statement for the organizational scope describing the organizational structure to which it applies. A statement of organizational scope shall be accompanied by a statement of software product scope.

4.3.2 Software licensor conformance

Full conformance for a software licensor is achieved by the software licensor demonstrating that all software within scope meets the relevant product conformance requirements, as specified under 4.2.2.

4.3.3 Ent tool provider conformance

Full conformance for an Ent tool provider is achieved by an organization demonstrating that all software within scope meets the relevant tool conformance requirements, as specified under clause 4.2.4.

Furthermore, in order to claim Ent tool provider conformance, all Ent tools produced by the organization shall be included in the product scope.

4.3.4 Software consumer conformance

Full conformance for an organization that acquires and uses software is achieved by demonstrating that there are Ents in place for all software in the customer organization's product scope and that the Ents comply with all mandatory requirements of this part of ISO/IEC 19770.

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5 Interoperability

5.1 Overview and key design decisions

This Clause explains the essential nature of Ents, and how the different types of Ent interrelate and are designed to provide for interoperability of creation and usage by all parties involved with entitlement data.

There are some key design decisions which underlie the specifications of this part of ISO/IEC 19770:

— **Non-modifiability of Ents**. Once they have been created and placed into use, existing records of Ents shall not be modified in any way, including via the addition of data.

  There are some situations which can be considered modifications, which are handled in the following ways, without violating this design principle that Ents shall not be modified:

  — **A primary Ent is issued which is incomplete or contains an error**. There are two ways of dealing with this situation:

    — **Full replacement**. The incomplete or erroneous Ent is revoked by issuing a supplemental Ent which revokes the Ent and a new Ent is created which replaces the Ent which was incomplete or in error.

    — **Amending by adding data**. Another approach possible with this part of ISO/IEC 19770 is to issue a supplemental Ent with just the updated data. The interpretation in such a situation is to use the latest version of specific data. However, an Ent creator may specify an alternative interpretation, that the supplemental Ent is purely additive.

  — **A supplemental Ent is issued which management chooses to change or revoke.** This would be the case in particular for allocations, but could apply to other types of supplemental Ents. The way of dealing with this situation in this part of ISO/IEC 19770 is to revoke just the supplemental Ent, and then issue a corrected supplemental Ent (if needed).

NOTE Although it could be possible to add data to an Ent and still validate authenticity on an element-by-element basis, this is complex to achieve in practice, and creates challenges for ensuring a clear audit trail of changes (including sequence and who made the changes). Such a technically complex approach also creates acceptance issues for software licensors. The revision of ISO/IEC 19770-2 is currently in development, also rejects this highly technical approach which was included in the 2009 version. Consequently, the approach to be taken for this part of ISO/IEC 19770 is to mandate the non-modifiability of Ents, with any additions or changes needing to be made through supplemental Ents, each of which provides its own clear audit trail. Furthermore, the expectation is that all Ents which are supplied by one organization (e.g. a software licensor) for use by another (e.g. an end-user organization) will be signed in their entirety, which in any case will prevent data from being added to them.

— **Transactional nature of Ents.** Ents should represent individual actions (within the organization) or transactions (between organizations) related to licenses and their associated entitlements. Ents are not intended to show the current state of something which is potentially changeable. Current state can only be determined by forming a consolidated view of all relevant Ents, which is the task of ITAM tools, not of the Ent records themselves.

— **Uniqueness of identifiers.** As for ISO/IEC 19770-2, this part of ISO/IEC 19770 does not require a registration authority and therefore it relies on other mechanisms to ensure uniqueness of identifiers within relevant contexts.

5.2 Ent identifiers - <entId>

The unique identifier for each Ent is the <entId>. This is a GUID which may be formed in different ways, as long as global uniqueness is achieved.

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5.3 Use case overview

5.3.1 General

There are a number of basic use cases which can be supported by the definitions contained in this part of ISO/IEC 19770. Note that the Ent merely records external events or actions, and does not constitute an action by itself. Compliance with any associated licensing terms and conditions is still necessary. For example, to create an Ent which represents a software license you should have that valid license, and not just "invent" it fraudulently. Likewise, to transfer an entitlement to another organization it is not sufficient to create transfer transactions using Ent, rather, compliance with the necessary terms and conditions for license transfers is required.

The main use cases supported by the Ent specification are given below. Each provides a short explanation of how it is implemented. The types of Ent referenced in the use cases are described in more detail in 5.4 and 5.5.

5.3.2 Issuance of an initial entitlement

Issuance of an initial entitlement is the "base" Ent type. For commercial software, Ents would ideally be issued by the licensor, who is also typically also the software creator. Ents may also be issued by third party suppliers. This can be necessary if licensors do not supply Ents, to encapsulate legacy entitlements which had no associated Ents, etc.

Initial entitlements are implemented by creating a primary Ent of <entType> = "Initial".

5.3.3 Adding information

End-user organizations and third parties may wish to add information to an entitlement, the reseller SKU or departmental cost coding information.

Information is added to an entitlement by creating an Ent of <entType> = "Supplemental", and with <supplementalEntType> = "InfoAdded" with specifies a <linkedToPrimaryEntId> equal to the <entId> of the primary Ent which is to be extended.

```
fabrikam.com_office_AAA.ent

<ent
   entId="AAA"
   entType="Initial"
```

```
reseller.com_office_BBB.ent

<ent
   entId="BBB"
   entType="Supplemental"
   supplementalEntType="InfoAdded"
   linkedToPrimaryEntId="AAA"
```

Figure 1 — Example of adding information through supplemental Ent

5.3.4 Allocations

Allocations provide (part of) an entitlement to another organization for their use, but do not transfer ownership. This is common in large organizations where one organization may consolidate purchasing for many other entities which manage their own entitlements, and then allocate the required entitlements to the individual entities. This is used when there are separate Entitlement Libraries in each organization. The ordering organization retains ownership of the entitlements, but the day-to-day entitlement management responsibilities are exercised by the individual entities.

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Allocations are implemented by creating two different types of Ents:

— A supplemental Ent of type = “AllocationSent” is created with a <linkedToPrimaryEntId> equal to the <entId> of the primary Ent which is to be Allocated. This Ent is used by the allocating organization (or sender). The quantity is negative, if 50 entitlements are allocated, then the quantity is recorded as -50.

— A primary Ent of type = “AllocationReceived” is created, with a new entId. This Ent is used by the organization receiving the allocation. The quantity is positive.

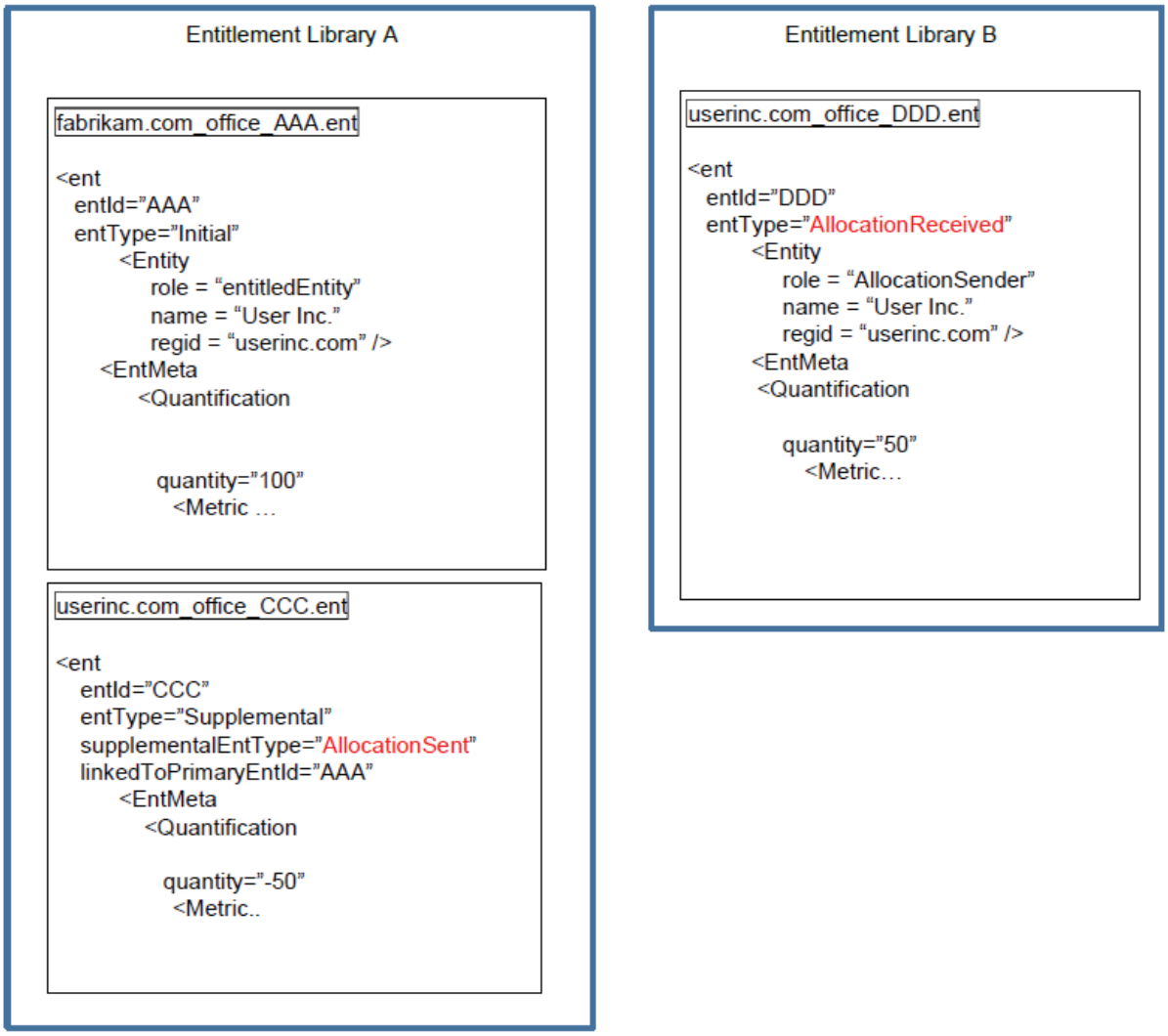

Figure 2 — Example of allocation between entitlement libraries

5.3.5 Transfers

Transfers are needed to reflect legal change of ownership of (part of) an entitlement to another organization. There are several reasons why transfers may be desirable, including divestiture, or demerger or an organization. When executing a transfer the end-user should ensure that they have the right to do so under the terms of their contract with the software licensor. They may also gain agreement for this by consulting with the software licensor.

The transferring organization no longer has any responsibility for license compliance for the transferred entitlements.

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Transfers are implemented by creating two different types of Ents:

— A supplemental Ent of SupplementalEntType = “TransferSent” is created linked to the primary Ent by setting <linkedToPrimaryEntId> equal to the <entId> of the primary Ent which is to be transferred. This Ent is used by the allocating organization (or sender). The quantity is negative, e.g. if 50 entitlements are transferred, then the quantity is recorded as -50.

— A primary Ent of type = “TransferReceived”, with a new entId. This Ent is used by the organization receiving the allocation. The quantity is positive.

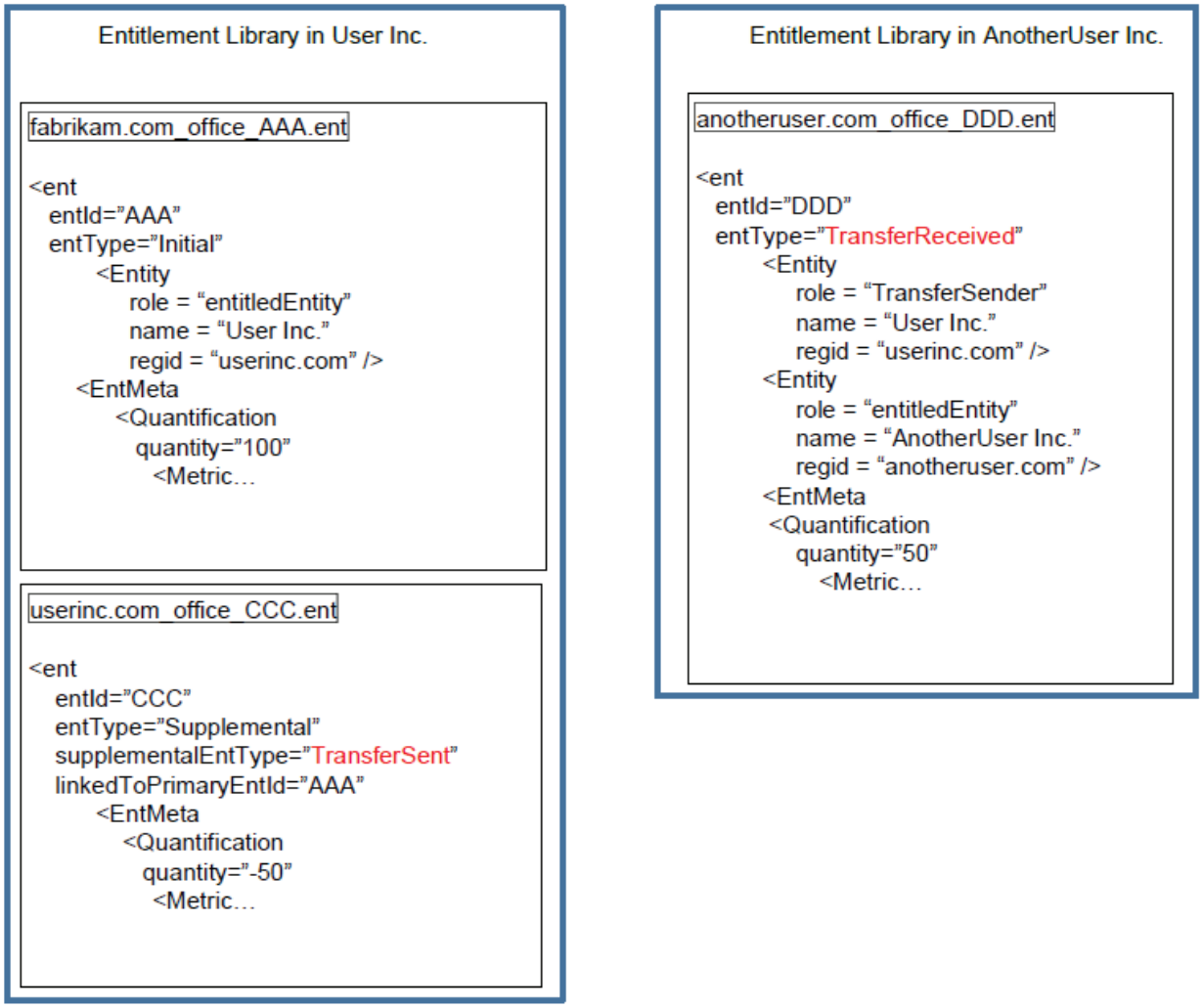

Figure 3 — Example of transfer between licensed entities

5.3.6 Consolidations

Consolidating multiple entitlements into one reflects the need or desire to create a single Ent to replace numerous other Ents. The concept allows considerable discretion in how this is done, so it is important that it be well justified and documented for possible future audits.

Consolidations are implemented by creating two different types of Ents:

— A supplemental Ent of SupplementalEntType = “ConsolidationPart” is created with a <linkedToPrimaryEntId> equal to the <entId> of the primary Ent which is to be consolidated. This supplemental Ent effectively cancels the previous Ent and all of its supplemental Ents. This is repeated for each initial Ent which is to be consolidated.

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— A primary Ent of type = “Consolidation” is created with a new <entId>. This Ent should contain all of the relevant information from the Ents which have been consolidated and effectively replaces all of the consolidated Ents and entitlements. It lists which Ents have been consolidated to it in an attribute called <consolidatesEntIds>.

There may be a number of situations which call for this type of action, for example

— A software licensor and end-customer may formally agree in writing an actual entitlement position at the end of an audit, superseding all previous entitlements.

— An end-user organization may wish to represent the result of detailed analyses of underlying licenses (with or without Ents) in a single Ent for management purposes going forward, e.g. when initially setting up a system for software asset management, or if using a simple tool such as a spreadsheet.

— An end-user organization with a complicated entitlement history or legal structure may wish to clarify an analysis of the current licensing position to optimize entitlements (e.g. upgrade entitlements may only be valid with specific underlying entitlements; or there may be multiple alternative upgrade paths which some tools may not correctly identify).

5.3.7 Revocations

It may be necessary to revoke any of the above Ents, in whole (i.e. the primary Ent and all of its supplemental Ents) or in part (i.e., a single supplemental Ent). This may be occasioned by recognition of a mistake in creating the original Ent or by a management decision (e.g. revoking an allocation to another entity which has subsequently purchased entitlements in its own name).

Revocations are implemented by creating a supplemental Ent of type = “Revocation”, this will identify the <entId> of the Ent which is to be revoked in a <linkedToPrimaryEntId> attribute.

5.3.8 Archiving

The purpose of archiving is to remove Ents from active use, so that they are no longer actively used for entitlement management purposes. This would be appropriate, for example, for entitlements for software no longer being used, because of a change of platform or software architecture.

The archive functionality is implemented by creating a supplemental Ent of type = “Archived”, this will identify the <entId> of the Ent which is to be revoked in <linkedToPrimaryEntId> attribute.

5.4 Ent types

The type of Ent is defined by the value entType. Its possible values are given in Table 1.

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