A Framework for the Epublishing Ecology

Public Comment Draft

Version 0.78
September 25, 2000

produced by the

www.openebook.org

<u>Table of Contents</u>

1 Introduction

1.1 Summary

This document provides a systematic foundation for critical thinking, discussion, standards development and decision making in the world of electronic publishing ("epublishing").

1.2 Document Status

This document is currently under development by the OEBF's Digital Rights Management Strategy working group. It is a draft being made available simultaneously to the full membership of the Open eBook Forum and to other interested parties for a 30-day review and comment period beginning September 25th, 2000. Please send comments to framework@openebook.org. When proposing specific changes to the document, please make changes directly to a copy of this document using the Track Changes feature of Microsoft Word. An electronic copy can be obtained from www.openebook.org.

1.3 Provenance

The Open eBook Forum (OEBF) is an international, non-profit trade organization whose mission is to promote the development of a thriving epublishing market. To do this, it creates, maintains and promotes adoption of epublishing standards and brings together stakeholders in the epublishing world by providing an inclusive forum for discussion of epublishing-related social, legal and technical issues.

In the spring of 2000, the OEBF formed a working group to begin developing a Digital Rights Management strategy for the OEBF and chartered that group to produce various deliverables (glossary, reference models, stakeholder profiles, etc.) This document embodies those deliverables.

A combined team of about sixty people worked through the spring, summer and early fall of 2000 to produce the Framework. These authors met many times in person and also had numerous teleconference calls. In the course of this work, it became clear that, with only small adjustments, most of the work could apply to the whole epublishing ecology, not just to digital rights management for electronic books. The group made those adjustments and synthesized the deliverables into this generalized Framework.

1.4 Motivation – Promote Clarity, Facilitate Automation

Terminological differences often derail discussions about standards, technologies, rights, and other important matters, especially when the speakers come from different fields. In order to facilitate clear communication between disparate stakeholders with disparate perspectives, this Framework describes an "ontology" for the epublishing ecology.

Ontological efforts arise when people suspect they can codify and/or control a previously ill-defined realm of human experience. Examples include the formulation of the periodic table and the American Constitutional convention of 1789 (which stipulated the existence of certain fundamental "truths", "rights", and political processes). Ethereal as they might be, such efforts are often (correctly) seen as prerequisites for social and technical progress.

Implementation of computer technology requires precision. An ontology can be a systematic, precision-enhancing framework for understanding and communicating about a particular subject (see sidebar). This framework is, among other things, a mechanism that will help "technologists" understand and computerize, if not transform, the world of publishing already operating in the social and legal worlds.

The epublication is one of the key objects at the heart of the Framework. The formal definition of the epublication -- "a Literary Work in the form of a Digital Object" -- highlights this. We are using the term "Digital Object" not simply in the sense of a file, database or any other such object with a digital existence. Rather we use it with a specific meaning: a sequence of bits that incorporates unique naming/identity, metadata, and content. This entity is the fundamental unit of distribution and transaction within the Framework. While that unit can "encompass" the whole of an epublication, it is also capable of being recursive. The author or publisher may want to break an epublication down into multiple independently saleable components (parts, chapters, paragraphs, recipes, programs, graphs, audio or video clips, etc.), each of which manifests itself as a digital object, i.e., a unit of distribution and transaction.

Ideas such as these will form the basis of the new epublishing media, and this Framework will provide the tools necessary to examine such ideas comprehensively from each important perspective and, finally, to build standards and systems that support such ideas.

What is an Ontology?

The main purpose of an ontology is to enable communication in a way that is independent of the individual system technologies, information architectures and application domain.

The key ingredients that make up an ontology are a vocabulary of basic terms and a precise specification of what those terms mean.

The term 'ontology' has been used in this way for a number of years by the artificial intelligence and knowledge representation community, but is now becoming part of the standard terminology of a much wider community including object modeling and XML.

An ontology is more than an agreed vocabulary An ontology provides a set of well-founded constructs that can be leveraged to build meaningful higher level knowledge. The terms in an ontology are selected with great care, ensuring that the most basic (abstract) foundational concepts and distinctions are defined and specified.

http://www.ontology.org/main/papers/faq.html
As of July 15, 2000.

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2 Framework Overview

2.1 Structure

The Framework is composed of three parts: the Reference Model, the Glossary and the Stakeholder Profiles. In this overview, we provide brief descriptions of each of these parts.

2.1.1 REFERENCE MODEL

The reference model is the core of the Framework and captures our vision of the epublishing world:

- **Domains** - the epublishing world is composed of multiple Domains (commercial, non-profit, government, academic, etc)

- **Elements** - within the Domains, there are four types of Elements: Objects, Roles, Interactions and Authorities.   Objects flow between players of Roles in Interactions that are governed by Authorities.

- **Perspectives** - the Domains and the Elements within them can be viewed from three fundamental Perspectives (social, legal and technical)

Modeling the epublishing ecology in this way will help the industry to define requirements, best practices and standards clearly and comprehensively for all the stakeholders in all the domains.

2.1.2 GLOSSARY

A central component of any ontology is the glossary, a vocabulary of basic terms with a precise specification of what those terms mean.

To illustrate the value of a glossary and the importance of agreement on precise terminology, consider the term "ebook." The term "ebook" has been often used colloquially to convey several different, and somewhat contradictory, concepts; in particular, the term "ebook" is sometimes used to mean the more general "epublication" (in other words to include serial and non-serial publications) and even the hardware device on which epublications are read. In contrast, this Framework's glossary defines the epublishing world as made up of "epublications," a class further divisible into serial ("ejournals") and non-serials ("ebooks").

Because the ontology strives to present "correct" and mutually consistent definitions, this entire Framework (including its glossary) accordingly adheres to the term "epublication" when speaking about the more general concept, the term "ebook" when non-serial publications are meant, and "ejournal" when referring to serial publications delivered and accessed electronically.

2.1.3   STAKEHOLDER PROFILES

Section 5 profiles the people and organizations with a financial, economic, or moral interest in the performance of one or more functions of the epublishing ecology. Section 5 is not specifically concerned with defining the roles played (or functions performed) by these various stakeholders, but rather with enumerating the stakeholders as a checklist for future requirements gathering activities.

2.2   Other Media Types

Although this work focuses on epublishing, it is clear that epublications are just one part of a larger digital revolution that includes other media types (e.g., music, pictures, movies, etc.). It has not specifically been our intent to address the digital ecology for media elements other than electronic publications, but much of this work is general enough to encompass these other media types.

3 Glossary

The glossary is composed of the most important terms used when discussing the epublishing ecology and has been thoroughly reviewed in an attempt to produce precisely defined terms. These are the terms that cause the greatest amount of confusion, particularly across perspectives.

While the terms and their definitions have been extensively reviewed and are expected to support this Framework and the standards developed for it, anyone seeking to use any of these terms in a contract should request legal advice.

Accessibility. (n.) The quality or state of being usable by a person with a disability, where use is facilitated through built-in features or Assistive Technology appropriate to a particular individual. Accessibility is often mandated by governmental entities for particular circumstances or classes of products.

Actor. (n.) An entity (person, corporation, computer system, etc.) that plays one or more Roles in the Epublishing ecology.

Alternate Media. (n. pl.) Means for reading that can be used by a person with a print disability in lieu of standard vehicles of display. Examples include braille, enlarged text, altered text characteristics such as font type and size, and synthetic or recorded speech, which may or may not be synchronized with an on-screen presentation.

Anonymity. (n.) 1. The quality or state of being unknown or unacknowledged. (AHD95). 2. In cryptography, the state of a participant in a cryptographic transaction in which the participant's identity is, by design, concealed or unknowable.

Assistive Technology. (n.) Tools, often a combination of hardware and software, used by persons with disabilities to access, use, manipulate or otherwise interface to devices and content when these are not usable in their native form (e.g., screen enlargement software, braille displays).

Authority. (n.) An entity having the moral or legal right and ability to control other entities in a particular domain (CAM00), e.g., providing policy and enforcement in the trafficking and trade of Digital Objects.

Content. (n.) The primary, non-Metadata information or data intended to be conveyed by an Epublication.

Copyright. (n.) The right to specify the terms and conditions under which an original work of authorship can be used.

Digital Object. (n.) A sequence of bits that incorporates unique naming, Metadata, and Content. It may be recursive, enabling management of objects at multiple levels of granularity (the whole document, a paragraph, graph, etc.) in any medium (text, audio, video, image, etc.). This entity is the fundamental unit of distribution and transaction within the OEBF's Framework for the Epublishing Ecology.

Digital Rights Management.   (n.) The definition, protection, or enforcement of rights pertaining to Content produced, delivered or accessed electronically.

Ebook   *See electronic book.*

Electronic Book   (n.) *Sometimes ebook.*   1. A Literary Work in the form of a Digital Object, consisting of one or more standard unique identifiers, Metadata, and a Monographic body of Content, intended to be published and accessed electronically. *See also epublication.*   2. May also refer to the hardware device created for the purpose of reading ebooks (vide RocketBook, SoftBook, Franklin e-bookman).

Electronic Journal.   (n.) *Sometimes ejournal.*   A Literary Work in the form of a Digital Object, consisting of one or more standard unique identifiers, Metadata, and an ongoing Serial body of Content, intended to be published and accessed electronically. *See also epublication.*

Electronic Publication.   (n.) *Sometimes epublication.*   A Literary Work disseminated in the form of a Digital Object and accessed electronically. These works can be multimedia, incorporating text, digitized images, animation, sound tracks, and functioning formulas. They may also use hypertext technology. (Modified CHI93.)

Electronic Publishing.   (n.) *Sometimes epublishing.*   The act of disseminating Literary Works in digital form.

Ejournal.   *See electronic journal.*

End User.   (n.) The category of person for whom an epublication is produced. Usually someone who buys or borrows and reads an epublication.

Epublication.   *See electronic publication.*

Epublishing.   *See electronic publishing.*

Event.   (n.) An occurrence, which may trigger additional events in the Epublishing ecology. (Modified AHD95.)

Function.   (n.) A process or set of interactions that serve some purpose in the Epublishing ecology.

Governance.   (n.) The act, process, manner or power of exercising authority and control: government.(WOR00.)

Intellectual Property.   (n. pl) Something owned or possessed that is a product of the human mind (e.g., works protected under Copyright law and inventions protected by patent law).

Intermediary.   (n.) A Role played by an entity that acts as an agent or go-between among persons, groups, or the like. (Modified WOR00.)

Interoperability.   (n.) The ability of technical, legal, social and/or business elements of the Epublishing ecology to work together in the performance of one or more Functions.

Library.   (n.)   1. A service or institution that makes a collection of Content available for use (typically lending) but not for sale.   2. A feature that allows one to store and organize one's Epublications, online or offline.

License.   (n.) Official or legal permission to do or own a specified thing. (AHD95)

Literary Work.   (n.s.) From the U.S. Copyright Act 1976: "'Literary Works' are works, other than audiovisual works, expressed in words, numbers, or other verbal or numerical symbols or indicia, regardless of the nature of the material objects, such as books, periodicals, manuscripts, phonorecords, film, tapes, disks, or cards, in which they are embodied." *See also copyright.*

Metadata.   (n. pl.) Descriptive data, trade data, and other data about data or processes.

Monographic.   (adj.) Describes a non-Serial Literary Work that is published either complete in one part or complete, or intended to be completed, in a finite number of separate parts.

Object.   (n.) Entity that encapsulates Content, properties, attributes and Functions to perform a given task or define a specific process. *See also digital object.*

Originator.   (n.) Entity that conceives, creates or brings into being the Content of an Epublication.

Publisher.   (n.) 1. The Role within the value chain that elicits the creation of Literary Works and prepares, promotes, and distributes them to wholesalers, retailers, or End Users.   2. Self-publisher is one who creates a Literary Work and prepares, promotes, and distributes it to wholesalers, retailers or end-users without the assistance of an organized publishing Intermediary.

Protected.   (v.) The state of being kept from damage, attack, theft or misuse.

Requirements.   (n. pl.) The stated conditions or capability that must be met or possessed by a system to satisfy a contract, Standard, specification, or other formally imposed document. (IEE83)

Rights Holder.   (n.) An entity that owns or has been licensed the digital rights for the intellectual property created by the Originator.

Role.   (n.) A set of Functions expected to be performed by an entity or entities in combination.

Security.   (n.) The condition of a system that results from the establishment and maintenance of measures to protect the system (RFC2828).

Seller.   (n.) An entity that attracts consumers, enables them to browse and search Metadata and ultimately sells the electronic publication to the consumer.

Serial.   (adj.) Describes a non-Monographic Literary Work that is published on a substantially regular periodical and ongoing basis, such as a journal, magazine, newspaper, or newsletter.

Service Provider. (n.) An entity that provides an ancillary service such as assisting in the creation, distribution or protection of the electronic publication or the collection and distribution of consumer information.

Stakeholder. (n.) An entity (person, organization, etc.) with a financial, economic, or moral interest in an Epublication or the performance of one or more Functions in the Epublishing ecology.

Standard. (n.) 1. An agreement necessary for interworking, portability, and reusability. A standard may be de facto for various communities, or officially recognised nationally or internationally. (Modified ODC00.) 2. An agreement among parties, captured in clear, unambiguous language, that defines behavior of systems, people or organizations.   3. Something to which systems, people or organizations can conform.

Superdistribution. (n.) Digital Objects are infinitely replicable and easily distributed via networks or between devices. Superdistribution leverages these two aspects of replicability and distribution by ensuring the Originator of the Digital Object is fairly compensated.

Technology Provider. (n.) An entity that provides either software or hardware that enables the electronic distribution of content.

Trusted Third Party. (n.) An Intermediary or additional party to a transaction who has been granted authority by one or more of the other parties to the transaction to perform certain Functions such as certification, registration, encryption, Security, credit card clearance, rights clearance, transaction reporting, etc.

4   Reference Model

4.1   Domains

The epublishing world is composed of multiple domains (e.g., commercial, non-profit, government, academic, etc.).

Epublishing is a broad activity that occurs in many Domains. Governance structures (authorities) typically vary between domains.

State libraries are engaged in creating electronic archives of important government publications. The US Copyright Office and the Library of Congress have initiated and are developing procedures for the automated registration of copyright and the deposit of epublications. The Association of American Publishers and a handful of other organizations have created the International Digital Object Identifier Foundation to promulgate the DOI as the identifier and persistent means of tracking ejournal articles, ejournals, and other epublications.

In each of these examples, various organizations are performing epublishing functions under the influence of different governance structures. As the epublishing ecology flourishes, it will touch the lives of every reader on the planet, so it is critical to recognize that governance varies from domain to domain. Epublishing systems and standards must be designed to be compatible across many domains and their related governance structures.

4.2   Element Types

Four types of elements populate a domain: Objects, Roles, Interactions and Authorities.   Roughly speaking, Objects flow between players of Roles in Interactions that are governed by Authorities:

- Roles are performed (or "played") by persons, organizations and systems,

- Interactions occur between players of Roles,

- Objects are the "things" which flow during Interactions between players of Roles,

- Authorities provide the governance context in which Interactions occur.

These four types of elements can be combined to describe a specific scenario. Figure 1 illustrates the generic graphical notation used in this Framework for modeling scenarios.
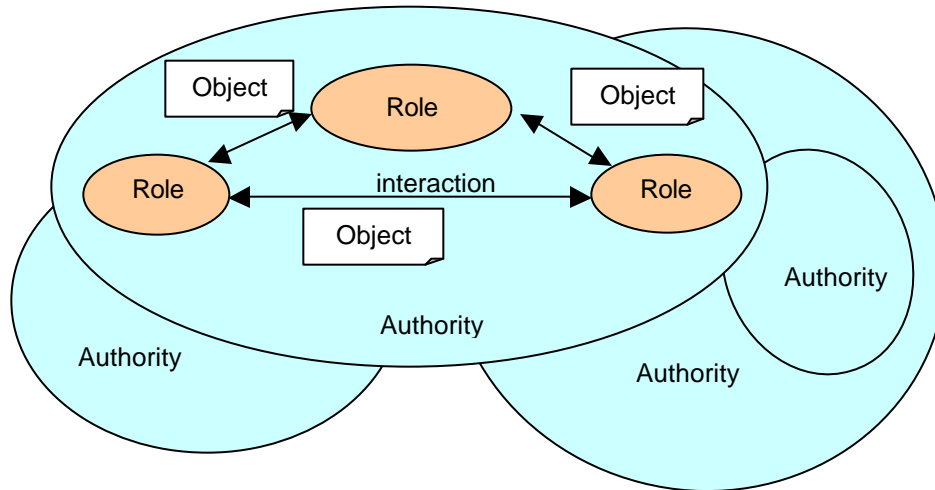
Figure 1 - Elements in the Epublishing Ecology

4.2.1 ROLES

Roles *are performed (or "played") by persons, organizations and systems.*

This Framework focuses on *what* is being performed (roles) rather than *who* is performing, because the correspondence of roles to people and organizations will change as the industry evolves and also because a particular person or company often plays more than one role. For example, a self-publishing author may play the role of originator (a.k.a. creator), editor and retailer, but over time the author may delegate some of those roles to other players some of which may not even be human beings, or legal entities. They may be (and in the future, they increasingly will be) computer systems and software agents.

Roles in the epublishing ecology fall into three abstract categories:

1. **Originators** (e.g., authors, anthologists, word processors) generate electronic publications. In the epublishing ecology, there must be at least one originator, but in the case of a collaborative work there may be more than one.

2. **Intermediaries** (e.g., editors, publishers, and agents) facilitate the flow of content and payments from Originators to End-Users (see below). There may be many intermediaries, or there may be none. When there are multiple

intermediaries (e.g., when there is an agent, an editor, *and* a publisher) these may interact with each other[1].

3. **End-Users** (e.g., consumers, readers, library patrons) purchase and consume electronic publications.

As shown in Figure 2, these three types of role players can be assembled to illustrate the "value chain" of the epublishing industry. It is important to note that, in this diagram, the number of intermediaries can range anywhere from none to many, with the black arrow indicating that the interactions proceed from intermediary to intermediary.
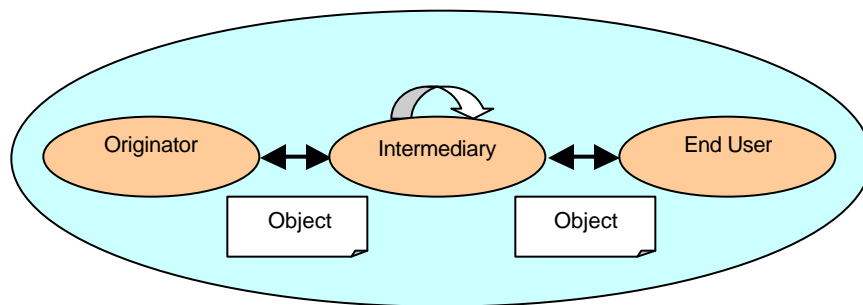

Figure 2 – The Value Chain

Using these abstracted role types instead of the specific organizations or stakeholders is an antidote to the disagreements about "the" value chain and allows discussion to proceed about those aspects on which everyone agrees: namely, that somebody creates some stuff, the stuff may pass through some intermediaries, and eventually the stuff is used by somebody.

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[1] A interesting kind of Intermediary is the Trusted Third Party. These (a) seem "meta" to the publishing value chain, (b) seems to stand "to the side of" the value chain" and (c) whereas content and payments flow through most of the publishing value chain, "something else" (trust?) often flows to and from Trusted Third parties.

As illustrated by Figure 3, the three basic role categories can be further subdivided into the concrete roles found in the ecology (e.g., author, artist, etc.)
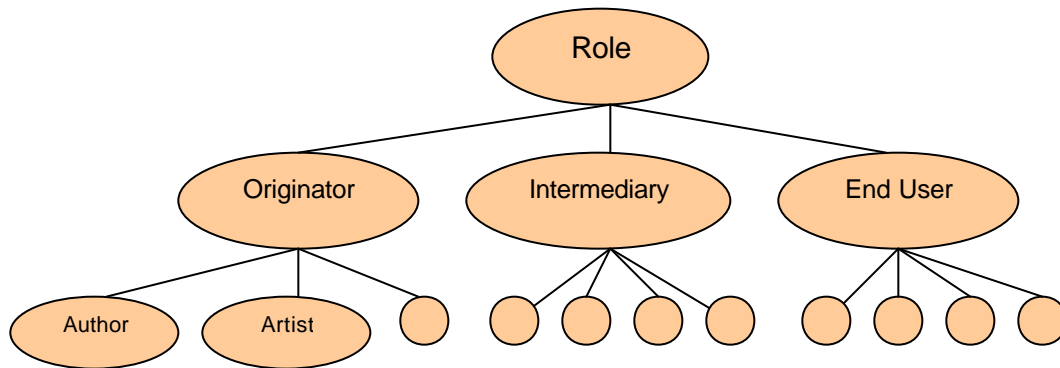

Figure 3 – The Types of Roles

4.2.2 OBJECTS

Objects *are the "things" which flow between players of Roles.*

Objects include documents, agreements, information, payments, etc. These are not mutually exclusive kinds; documents, agreements and information can all serve as forms of payment in some transactions. We have found it convenient to divide Objects into Rights Objects, Event Records, Products, Services, Monetary Objects, Personal Data, and Enablers.

A particularly important type of Object is a *Digital Object.* A Digital Object is a sequence of bits that incorporates unique naming/identification, metadata, and content. It can be recursive, enabling management of objects at multiple levels of granularity (the whole document, a paragraph, graph, etc.) in any medium (text, audio, video, image, etc.).

4.2.3 INTERACTIONS AND FUNCTIONS

Interactions *occur between players of roles.*

Certain coherent collections of interactions advance the role players' interests or goals. We call these collections of interactions "functions" by analogy to evolutionary biology, where it is clear that some processes, operating through robust but loosely coupled interactions, perpetuate the ecosystem, its processes, and so on. For example, the editorial function can consist of numerous interactions between and sometimes among agent, author, desk editor, copyeditor, designer, desktop publishing operative, proofreader, indexer, cover designer, and packager. These interactions add value to the package sold, and this, by enhancing commerce, helps editors and their co-workers perpetuate their activities.

4.2.4 AUTHORITIES

Authorities *provide the governance context in which Functions are performed.*

Authorities may be well-defined (e.g., computer languages, technical standards, government agencies) or ill-defined (e.g., social norms); they overlap and they nest. Of great concern to the OEBF is that standards be agreed for key interactions and objects such that the epublishing market develops both vigorously and effectively. In some instances this will require explicit governance (authorities), and in others governance will be more implicit in the general behavior and activities of the market.
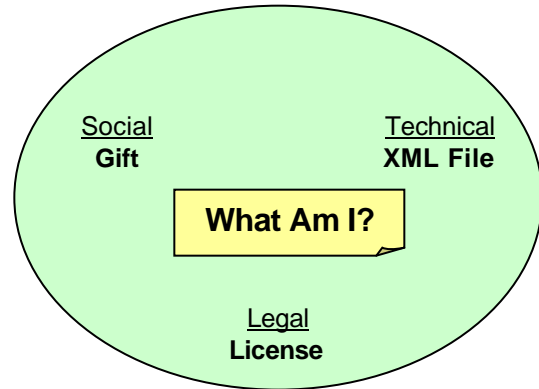
4.3   Perspectives

The domains and the elements within them can be viewed from three fundamental perspectives (social, legal and technical), each of which reveals a different view of the various elements

A major purpose of the present Framework is to help stakeholders recognize and understand the significance of perspectives that may be unfamiliar, yet essential to the workings of a healthy ebook ecology.

Social
Gift

Technical
XML File

What Am I?

Legal
License

Consider buying a book for a friend. From a social perspective, the "thing" you buy is a Gift. From a business perspective, it's a Purchase. From a legal perspective, it's a License. And from a technical perspective, it might be an XML File that encodes the rights associated with the book you bought.

In a healthy epublishing ecology, these different points of view must be, and are, reconcilable.
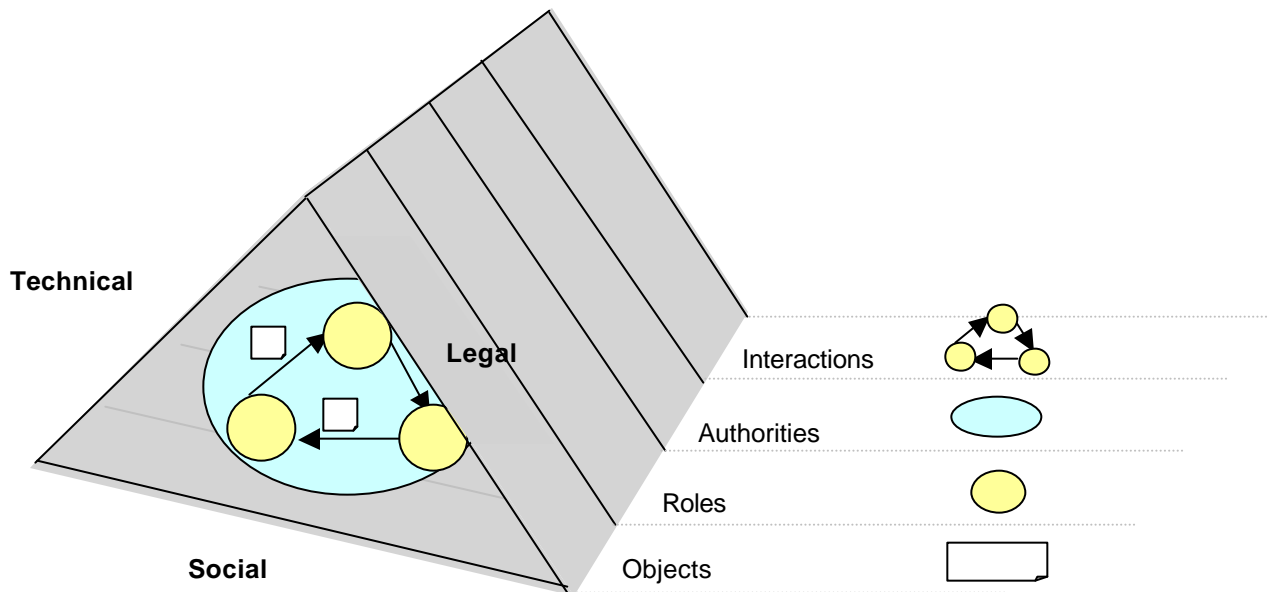
Figure 4 - The Framework Perspectives

Figure 4 illustrates that a single activity can be viewed, like an object in a prism, from three different perspectives.

As in the figure, scenarios can be viewed from three significantly different perspectives: social, legal and technical. Examining scenarios from all of these perspectives can reveal elements not seen from only one perspective. More importantly, there may be something that appears from each perspective to be different but is, in fact, the **same** "piece of territory" seen with "different maps."

Consider the transaction illustrated in Figure 5. In this transaction, an author writes an ebook manuscript and empowers his agent to negotiate a contract with a publisher. The agent does this, and then conveys the manuscript to the publisher. The publisher edits the manuscript, makes a product of it, and distributes it through a retailer to one or more consumers.   A consumer examines the product offering, and decides to buy it as a gift for a friend. The consumer provides a credit card number and a "personal certificate" to the retailer who submits them to credentialing and credit card processing agencies for authentication, validation, and debiting before the retailer sends the consumer an unlocking code that provides full access to the ebook. Eventually, the consumer's payment is divvied up and doled out to Retailer, Publisher, Author, Agent, Credit Card processor and Authenticating Agent.
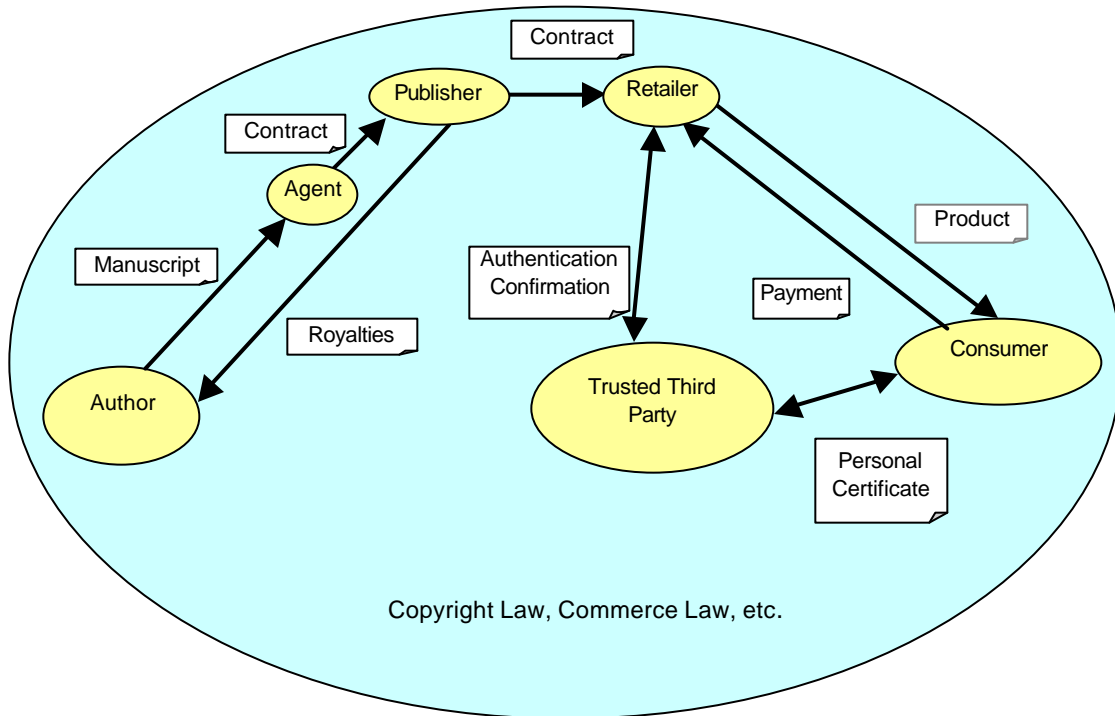
Figure 5 - Illustrative Transaction

As described above, these transactions clearly occur the business domain.   However, an attorney might find it more appropriate to stipulate that these interactions are governed by a legal jurisdiction specified in the contracts.   An accountant might characterize the transactions as conforming to Generally Accepted Accounting Principles.   An engineer might want or need to describe the same scenario from a technical perspective, in which case the interactions described are governed by various internet standards, RFCs, protocols, and so on.

No single perspective is "right;" each perspective is important.

4.4   The Conceptual Matrix

The prism of Figure 4 can be "unfolded" to produce a simple conceptual matrix that facilitates analysis and makes it easier to be sure all the important things in a scenario are identified and understood from each perspective. Figure 6 shows such a matrix with exemplary entries for each cell drawn from the scenario of somebody buying a book to give to a friend.

		Perspective		
		Technical	**Legal**	**Social**
Element	**Roles**	Web Browser	Licensee	Gift Giver
	Objects	XML Voucher	License	Gift
	Interactions	Transaction Recording	Licensing	Buying
	Authorities	Certificate Authority	Contract Law	Ethics

Figure 6 – Conceptual Matrix

5   Stakeholder Profiles

A stakeholder is an entity (person, organization, etc.) with a financial, economic, or moral interest in an epublication or the performance of one or more functions in the epublishing ecology. Each stakeholder (and the role it performs) must be considered when creating an electronic publication or when building systems or standards for use in the ecology.

The many stakeholders with an interest in epublishing can be divided into 8 broad categories:

- **Originator**: an entity that conceives, creates or brings into being the content of an epublication.

- **Rights Holder**: an entity that owns or has been licensed the digital rights in or to a Literary Work.

- **Publisher**: an entity that elicits the creation of Literary Works and prepares, promotes, and distributes them to wholesalers, retailers, or end users.

- **Service Provider**: an entity that provides an ancillary service such as assisting in the creation, distribution or protection of the electronic publication or the collection and distribution of consumer information.

- **Technology provider**: an entity that provides either software or hardware that enables the secure electronic distribution of content

- **Seller**: an entity that attracts end-users, enables them to browse and search metadata and ultimately sells the electronic publication to the end user

- **Distributor**: an entity that provides the epublication directly to an end user or another distributor through a protected transaction

- **End User**: an entity for whom an epublication is produced. Usually someone who buys or borrows and reads an epublication.

Each stakeholder category in this "value chain" potentially includes many sub-groups of stakeholders. And in some cases a particular entity may fit into more than one of these stakeholder categories.

5.1   Originator

An *originator* is an entity that creates or arranges for the creation of the intellectual property that will become the content of the electronic publication.

Stakeholders in this category may include but are not limited to:

- authors
- alternative media creators (audio, spoken word, Braille, etc.)
- film creators

- video creators
- photo creators
- actors
- screen writers
- translators
- musicians
- composers
- artists
- illustrators.

5.2 Rights Holder

A *rights holder* is an entity that owns or has been licensed the digital rights for the intellectual property created by the originator.

Stakeholders in this category may include but are not limited to:

- authors
- publishers
- translators
- book clubs
- alternative media producers
- online databases
- schools
- foundations
- museums

5.3 Publisher

A *publisher* is an entity that elicits the creation of literary works and prepares, promotes, and distributes them to wholesalers, retailers, or end users. They accept the intellectual property from the originator, edit or arrange for the editing of the intellectual property, and create and distribute the metadata which will help identify and market the epublication. The publisher might also arrange financing for the creation of the intellectual property.

Stakeholders in this category may include but are not limited to:

- trade publishers
- text book publishers
- self publishers.
- reference publishers
- periodical publishers
- legal publishers
- medical publishers
- newspapers and journals

- music publishers
- alternative media publishers

5.4 Service Provider

A *service provider* is an entity that provides an ancillary service such as assisting in the creation, distribution or protection of the electronic publication or the collection and distribution of consumer information.

Stakeholders in this category may include but are not limited to:

- editors
- agents
- artists and illustrators
- content converters
- metadata creators
- print-on-demand providers
- content hosting repositories
- content file format translators
- data consolidators
- usage rights managers
- print & disabled service providers
- consultants/integrators
- internet service providers
- application service providers
- telecom service providers
- CD-ROM replicators
- transaction services
- financial clearinghouses
- rights clearinghouses
- consumer information databases
- customer service providers
- industry organizations

5.5 Technology Provider

A *technology provider* is an entity that provides either software or hardware that enables the electronic distribution of content. A technology provider may range from pure technology provider to one that also fulfills other roles such as publisher, service provider and distributor.

Stakeholders in this category may include but are not limited to:

- software developers of
  - digital rights management trusted platforms
  - file formats

- o usage rights languages
- o media viewers
- hardware developers of reading devices

5.6 Seller

A seller is an entity that attracts consumers, enables them to browse and search metadata and ultimately sells the electronic publication to the consumer.

Stakeholders in this category may include but are not limited to:

- retailers (brick and mortar)
- e-tailers
- book clubs
- content aggregators
- individual consumers
- industry organizations
- government agencies
- schools
- businesses
- publishers
- newspapers and journals
- portals

5.7 Distributor

A *distributor* is an entity that provides electronic publications directly to end users or other distributors through protected transactions.

Stakeholders in this category may include but are not limited to:

- publishers
- on-line newspapers and journals
- retailers (brick and mortar)
- e-tailers
- electronic packagers
- private and public key managers
- content hosting repositories
- library (on-line or physical; granting usage to an end user for a limited period of time

5.8 End User

An *end user* is an entity that purchases and/or accesses the epublication. A consumer learns about and may purchase the electronic publication from a seller, but may receive the actual electronic publication from another party (e.g., a distributor). A consumer does not necessarily have to provide financial remuneration in order to receive and access an electronic publication. He or she may fill out a questionnaire or accept the

presence of advertising in the epublication. An end user can be the patron of a library or an employee with access rights to ebooks purchased by the employer.

Stakeholders in this group may include but are not limited to:

- individuals
- students
- teachers
- businesses
- schools
- libraries
- government agencies
- consumers with disabilities
- industry organizations
- agencies

6 Conclusion

The Framework is a first step toward the creation of open standards for the epublishing market across all of the relevant stakeholders. We can use it to analyze the requirements of a specific stakeholder and determine how those requirements might be harmonized with those of other stakeholders. We can use it to exert a common vocabulary for epublishing to facilitate discussions among standards-making initiatives, some within the publishing industry (e.g., the DOI system, the ONIX metadata system, and the EBX proposal) and some without (e.g., MPEG21 and W3C).

The Framework is a vision and a tool with which the Open eBook Forum hopes to move the nascent epublishing market toward an environment of open standards and maximum growth. This document is also a call to action for authors, publishers, retailers, distributors, lawyers, librarians, technologists, and consumers -- to anyone with an interest in ebooks:

Here is the framework, the vocabulary, and the forum.

Let's create an industry!

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