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DIGITAL OBJECT IDENTIFIER (DOD): A UNIQUE NUMBER

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Abstract: A digital object identifier (DOI) is a unique alphanumeric string to identify content and provide a persistent link to its location on the Internet. DOI has wide applicability to all forms of intellectual content and can therefore be applied to all forms of related materials, such as article, books, classroom exercises, supporting data, video, electronic files, and so on. It is like a social security number for a document online. It's a unique and permanent identifier that will take you straight to a document no matter where it's located on the Internet Information about a digital object may change over time, including where to find it, but its DOI name will not change. DOI names can be used for any form of management of any data, whether commercial or non-commercial.

keywords: Digital Object Identifier (DOI), PURL, URL, persistent identification.

1.0 Introduction

A digital object identifier (DOI) is a character string (a "digital identifier") used to uniquely identify an object such as an electronic document. Metadata about the object is stored in association with the DOI name and this metadata may include a location, such as a URL, where the object can be found. The DOI for a document remains fixed over the life time of the document, where its location and other metadata may change. Referring to an online document by its DOI provides more stable linking than simply referring to it by its URL. because if its URL changes, the publisher need only update the metadata for the DOI to lonk to the new URL.

2.0 The DOI as article Identifier

All DOI number begin with a 10 and contain a prefix and a suffix separated by a slash.

2.1 The Prefix:

The Prefix begin with "10" to distinguish the DOI from other implementations of the Handle System followed by a four-digit number or string (the prefix can be longer if necessary). In general each member has one prefix, but it is possible for members to have multiple prefixs (e.g. a prefix for each journal title).

2.2 The Suffix:

The suffix is determined by the publisher. The DOI is case insensitive (e.g. 10,1006/abc is the name as 10,1006/ABC) and the suffix must be unique within a prefix.

3.0 Definition:

Cross Ref (2002) defines A DOI is a "unique alphanumeric string assigned to a digital object, such as an electronic journal, article, report, or thesis. Each DOI name is unique and serve as a stable, persistent link to the full-text of an electronic item on the internet. Unlike a URL, a DOI name doesn't change over time; even if the item moves to a new location, the DOI name stays the same".

[1]

International DOI Foundation defines "the DOI is a system for identifying and exchanging intellectual property in the digital environment. Developed by the International DOI Foundation, it provides a framework for managing intellectual content, for linking customers with content suppliers, for facilitating electronic commerce, and enabling automated copyright management for all types of media."

The American Heritage Dictionary of the English Language defines "a code for identifying information, especially intellectual property, on the Internet independently of the location of the file that store the information".

4.0 History:

The DOI system is implemented through a federation of registration agencies coordinated by the International DOI Foundation which developed and controls the system. The DOI system has been developed and 2011 more than 50 million DOI names had grown to 85 million DOI names assigned through 9,500 organizations.

5.0 Handle system:

The Handle System provides efficient, extencible and secure resolution services for unique and persistent identifiers of digital objects, and is a component of Corporation for National Research Initiatives.

6.0 (NRI)'s Digital Object Architecture:

Digital object Architecture provides a means of managing digital information in a network environment. A digital object has a machine and plateform independent structure that allows it to be identified, accessed and protected, as appropriate. A digital object may incorporate not only informational elements. i.e., a digitized version of a paper, movie or sound recording, but also the unique identifier of the digital object and other metadata about the digital object.

The Handle System includes an open set of protocols, a namespace, and a reference implementation of the protocols. The protocols enable a distributed computer system to store identifiers, known as handles, of arbitrary resources and resolve those handles into the information necessary to locate, access, contact, authenticate, or otherwise make use of the resources.

7.0 Purpose of DOI:

The Primary Purpose of DOI is:

1. to provide a framework for managing intellectual content,
2. link customers with publishers,
3. Facilitate electronic commerce,
4. enable automated copyright management,
5. to make a collection of identifiers actionable and interoperable.

7.1 The linking functions of DOIs:

The DOIs in the reference list function as links to the content you are referencing. The DOI may be hidden under a button labeled *Article, Cross Ref, PubMed,* or another full-text vendor name. Reader can then click on the button to view the actual article or to view an abstract and an opportunity to purchase a copy of the item. If the link is not live or if the DOI is referred in a print publication, the reader can simplify enter the DOI into the DOI resolver search field provided by the registration agency CrossRef,org and be directed to the article or a link to purchase. Locating the article online with the DOI will give you electronic access to any online supplemental archives associated with the article.

7.2 DOI: where do we find it ?

The location of the DOI can depend on many things. Here are some places to look for the DOI:

1. First page of the electronic journal article
2. Near the copyright Notice.

3. Database landing page for an article.
4. Hidden behind a button
5. In the citation generated by the database.
6. Online using the free DOI lookup on **www.crossref.org**.
7. Abstract of an article.

7.3 The DOI system:

1. The DOI System provides a framework for persistent identification, managing intellectual content managing metadata. Linking customers with content suppliers, facilitating electronic commerce, and enabling automated management of media. DOI names are widely used in scientific publishing to cite journal articles. More than 90% of all DOI registered are for scholarly articles. The use of DOI names for the citing of data sets makes their provenance track able and citable and therefore allows interoperability with existing reference services.

2. It Developed by a group of international publishers, the DOI system provides a means of persistent identification for managing information on digital networks. The DOI System is implemented through registration agencies such as Cross Ref. which provides citation-linking services for the scientific publishing sector.

Cross Ref: is dedicated "to enable easy identification and use of trustworthy electronic content by promoting the cooperative development and application of a sustainable infrastructure". Cross Ref's participants have developed a system that provides **two critical functions. First,** they assign each article a "unique identifier and underlying routing system" that functions as a clearing house to direct readers to content, regardless of where the content resides. Second, they collaborate to use the DOI as an underlying linking mechanism "embedded" in the reference lists of electronic articles that allows click through access to each reference. Cross ref currently has more than 2,600 participating publishers and scholarly societies.

Entertainment Identifier Registry (EIDR): A registry of movies, television shows, and other commercial audio/video assets.

Data Cite: DOI names for accessing registered research datasets.

Institute of Scientific and Technical Information of china (ISTIC): DOI names of chinese journals, data sets and dissertations:

Japan Link Center (JaLC): DOI names for Japanese journal articles

Airiti, Inc: DOI applications to Traditional Chinese materials

China National Knowledge Infrastructure (CNKI): China based Information resources, including Chinese politics, economics, humanities, social science, Science, and technology, CNKI publishes databases, contain e-journal, newspapers, dissertations, proceedings, yearbooks, references works and more.

Publications Office of the European Union (OP): OP is the official publisher of the Institutions, bodies, offices and agencies of the European Union. As such, it is responsible for assigning DOI names on behalf of thses clients. Coverage includes the identification of all EU monographs, the Official journal of the EU and its individual acts, as well as a number of scientific articles.

Multilingual European DOI Registration Agency (mEDRA): Persistent citation system for Internet documents, Relation tracking between intellectual property entities, Certification of voluntary deposit including time stamping and digital signatures.

PubMed: Pub Med is produced by the U.S., National Library of Medicine (NLM) and is one of several database available from the NLM. It covers medicine, nursing, dentistry, veterinary medicine, the healthcare system, preclinical sciences and other life science. It is a bibliographical database citation and abstracts from about 5,000 biomedical journals. It includes details such as authors, titles and abstracts, but not the full text of journal articles. Pub Med also has links to online full text article from participating publishers.

Persistent Uniform resource Locator (PURL) : It is a Type of URL that act as an intermediary for a real URL of a web resource. When you enter a PURL in a Browser, the browser sends the page request to a PURL server which then returns the real URL of the page. PURL are persistent because once a PURL is established, it never needs to change. The real address of the web page may change but the PURL remains the same.

PURL is managed by the ONLINE COMPUTER LIBRARY CENTER (OCLC).

7.4 DOI System and Persistent UPLs (PURLs):

"A PURL is a Persistent Uniform Resource Locator. Functionally, a PURL is a URL. However, instead of pointing directly to the location of an Internet resource, a PURL points to an Intermediate resolution service. The PURL resolution service associates the PURL with the actual URL and returns that URL to the client as a standard HTTP redirects. The OCLC PURL Service has been strongly influenced by the active participants of OCLCs Office of Research in the Internet Engineering Task Force Uniform Resource Identifier working groups. PURLs are an approach to fixing the problem of ustable URLs.

7.5 Application of DOI:

Major applications of the DOI system currently include:

1. Persistent citations in scholarly materials (journal article, books, eBooks, etc) through Cross Ref, a consortium of around 3,000 publishers;
2. research datasets through Data Cite, a consortium of leading research libraries, technical information providers, and scientific data centers;
3. European Union official publications through the EU publications office.
   Permanent global identifiers for commercial video content through the Entertainment ID Registry, commonly knowa as FIDR

7.6 Benefits of the DOI system:

The DOI system offers a unique set of functionalities:

1. **persistence,** if material is moved rearranged or bookmarked;
2. **Interoperability** with other data from other sources;
3. **Extensibility** by adding new feathers and services through management of groups of DOI names;
4. **Single management** of data for multiple output formats (platform independence);
5. **Class management** of applications and services;
6. **Dynamic updating** of metadata applications and services.

Benefits of implementing the DOI system include facilitating internal content management and enabling faster, more scalable product development by delivering four key advantages in making it easier and cheaper to:

1. **know what you have** (users able to look at catalogues of content available throughout the enterprise);
2. **Find what you want** (users able to search and browse for content to be used or re- purposed);
3. **Know where it exists:** (able to see where the item exists within the organization);
4. **Be able to get it** (users and production tools able to retrieve the content).

8.0 Conclusion:

In the fast- changing world of electronic publishing, there is the added problem that ownership of information changes and location of electronic files changes frequently over the life of a work. Technology is needed that permits an identifier to remain persistent although the links to rights holders may vary with time and place.

The network environment creates an expectation among users that resources can be linked and that these links should be stable. The DOI systems provides a way to identify related materials and to link the reader or user of content to them.

A DOI name differs from standard identifier registries such as the ISBN and ISRC. The purpose of an identifier registry is to manage a given colletion of identifiers, whereas the primary purpose of the DOI system is to make a collection of identifiers actionable and interoperable.

9.0 Reference:

1. http://www.doi.org/RA Coverage.html
2. http://libguides.uhv.edu/content.php?pid=228519&sid=1890377
3. http://www.doi.org/demos.html
4. http://link.aip.org/ihtml/doi.isp
5. http://en.wikipedia.org/wiki/Digital object identifier
6. http://www.datacite.org/whatisdoi
7. http://apastyle.org/learn/faqs/what-is-doi.aspx
8. http://www.vourdictionary.com/digital-object-identifier
9. http://www.crossref.org/
10. http://www.crossref.org/01company/15doi.info.html
11. http://www.dentalhospital.ie/wp-content/uploads/2010/10/PubMed-Guide.pdf.
12. http://www.doi.org/factsheets/DOI PURL.html
13. http://canvas.instructure.com/course/808464/discussion topics/1597428