



## LSAL QuickTip: Understanding Identifiers

There are a variety of different identification schemes used on the internet today, many of which are very similar to the others. This QuickTip introduces the background of persistent identifiers, and compares some available schemes.

### Overview

In the ADL Registry (ADL-R), everything registered (content, metadata, repositories, users, etc.) is identified by a persistent identifier. There are many kinds of identifiers and acronyms that can cause confusion. This document describes why persistent identifiers are needed and the different kinds of identifiers, including URL, URN, URI, Handle System, DOI, GUID/UUID, Purl, OpenURL, and ARK.

Everyday use of the web reveals problems with the lack of persistent identifiers:

- finding two similar documents and struggling to determine which one is the “correct” version.
- encountering a “HTTP 404” message and not knowing where or if the page has moved.
- seeing the same exact words on two seemingly unrelated web sites.

The ADL-R uses the Handle System for its identifiers.

### Persistent Identifiers

Objects on the Internet are typically identified and located by a URL (e.g., <http://handle.net/faq.html>). We use the URL to represent both what we want and where it is.

A persistent identifier identifies what we want (a document, a person, an organization, etc.). The identifier of the object should never change. Persistency of an identifier depends more on organizational policies than technical limitations. For example, a URL <http://tinyurl.com/something> may be more persistent than a URN.

A persistent identifier is called “actionable” or “resolvable” if you can use it to determine where the object is. Different types of identifiers have different ways to determine where an object is.

### Types of Identifiers

There are many types of identifiers used on the Internet today. Following are simple definitions of the most commonly used identifiers.

Identifier Type	Definition
URI: Uniform Resource Identifier	URI is a term given to both URL and URN. Technically, URN and URI are namespaces within URI. It is useful to think of URIs as a family of identifier types instead of an actual identifier type.
Handle System	The Handle System guarantees the uniqueness of each handle by requiring each handle to be registered with a server. The Handle System associates a set of data with each handle, including optional URL(s) to make the identifier actionable.
DOI: Digital Object Identifier	A DOI is a Handle System handle issued by the International DOI Foundation for the publishing industry. Many journals use DOIs as persistent identifiers to their articles.
GUID / UUID: Globally Unique Identifier / Universally Unique Identifier	GUIDs and UUIDs are identifiers that are either guaranteed or assumed to be unique because they are generated by a specific algorithm to create a unique string of characters and numbers.

## Purl: Persistent URL

The Purl service from the Online Computer Library Center acts as an intermediate resolution service. A Purl is a URL such as <http://purl.oclc.org/<identifier>>. The OCLC allows users to register an identifier and point it at another URL that can be changed at will. The Purl software makes the Purl identifier actionable by redirecting internet users to the user-defined URL.

## OpenURL

OpenURL is a specification developed by Ex Libris and the Los Alamos National Laboratory to deliver appropriate resources to users, mostly in higher education and the journal publishing industry. By using a “link server” and providing a persistent identifier, the “most correct” version of a journal article is provided to the user based on criteria in the resolution system.

## ARK: Archival Resource Key

ARK is an identifier format and software similar to the Handle System. An ARK identifier is created by combining a label “ark:” with a namespace and unique identifier. Often this will be preceded by a URL to a web-server running ARK software, to become actionable. In addition to these characteristics, the ARK system defines policies for the creation of identifiers and encourages a support “promise” to provide access to a digital resource for a period of time.

The table below provides examples of the different types of identifiers as well as descriptions of their key characteristics.

Identifier Type	Example	Persistent	Actionable	Guaranteed Unique	Usage
URL	<a href="http://www.microsoft.com/">http://www.microsoft.com/</a> <a href="ftp://anonymous:@ftp.cise.ufl.edu">ftp://anonymous:@ftp.cise.ufl.edu</a>	No	Yes	Yes	Almost all resources on the web are identified by URLs.
URN	urn:ietf:rfc:2141 URN:ISBN:0-395-36341-1	Yes	No	No	Used to as a general way to represent other types of identifiers (such as ISBN).
URI	<a href="http://www.microsoft.com">http://www.microsoft.com</a> urn:ietf:rfc:2141	No	No	Maybe	See URL, URN.
Handle System	4263537/4070 10.1045/june2005-bekaert	Yes	Yes	Yes	ADL-Registry; the publishing industry; D-Space implementations.
DOI	10.1045/june2005-bekaert	Yes	Yes	Yes	The publishing industry.
GUID/UUID	DCE: {ff061150-2032-4ce8-ba5c-116b77723d17} Many other proprietary forms.				Microsoft products; many others.
Purl	<a href="http://purl.oclc.org/dc">http://purl.oclc.org/dc</a> <a href="http://my-purl-server.mydomain/id...">http://my-purl-server.mydomain/id...</a>	Yes	Yes	Yes	OCLC.

OpenURL		n/a	Yes	n/a	Ex Libris; numerous university libraries.
ARK	ark:/12025/654xz321/s3/f8.05v.tiff http://foobar.zaf.org/ark:/12025/654xz321/s3/f8.05v.tiff	Yes	Yes	No	California Digital Library.