Overview of PID Systems, October 2016

The information in this document is based on the PID Overview presentation by Jonathan Clark of the International DOI Foundation in the iPres 2016 tutorial Persistent Identifiers for Cultural Heritage [1].

ARK

- *Introduced in 2001*
- *ARK = Archival Resource Key*
- *Decentralized identifier system*
- *Developed by California Digital Library (CDL)*
- *Organisations can sign up to become Name Assigning Authority Numbers (NAANs) and run their own resolution infrastructure for ARKs*
- *A complete NAAN registry is maintained by the CDL and replicated at the Bibliothèque Nationale de France and the US National Library of Medicine.*
- *ARK is a URI that provides a multi-purpose identifier given to information objects of any type*
- *ARKs are of the form http://NMAH/ark:/NAAN/Name*
- *NMAH: Name Mapping Authority Host – the organization that currently provides service for the object*
- *ARK provides 3 generic services (Access, Policy and Description) Not a formal standard: an Internet draft not yet approved by IETF*

URN

- *Introduced in 1994, formalised in 1997*
- *URN = Universal Resource Name*
- *Persistent, location-independent, resource identifiers*
- *No central governance for URN and no central resolving infrastructure*
- *Major national libraries in Europe have established their own subgroup of URN (URN:NBN) and operate a joint resolving infrastructure*
- *Syntax is <URN> ::= "urn:" <NID> ":" <NSS> where <NID> is the Namespace Identifier, and <NSS> is the Namespace*
- *For example: urn:isbn:9789521061547 or urn:ietf:rfc:2648*
- *Work continues on syntax (latest revision September 2016)*
- *Documented in Internet standards (Syntax: RFC 2141; Resolution: RFC 2483; Namespace definitions: RFC 3406)*

URN:NBN

- *Introduced in 2001*
- *NBN = National Bibliography Number*
- *Publication identifier systems used by national libraries in countries such as Germany, Italy, Finland, Norway, and Sweden.*
- *The US Library of Congress is the global registration agency for the NBN namespace*
- *Each national library uses its own NBN strings; there is no global authority which controls them. Thus, NBNs are unique only on national level*
- *Resolvers also operate on a national level*
- *Example: urn:nbn:de:bvb:19-146642*
- *URN namespace for NBNs has been assigned and is described in IETF RFC 3188.*
- *Note this is an example of how a URN namespace is used by a community not a separate PID system*

PURL

- *Introduced in 1995*
- *PURL = Persistent Uniform Resource Locator*
- *Intended as an interim system to be used until the URN framework is well established*
- *Developed and implemented by OCLC*
- *A PURL looks just like a URL, except it points to a resolution service instead of the actual location of the digital resource. The resolution service then redirects the user to the appropriate URL*
- *Note that very recently (September 2016) the resolver and admin interface was transferred from OCLC to Internet Archive*

URI

- *Introduced in 2005*
- *URI = Uniform Resource Identifier*
- *An extensible means for identifying a resource within the Web.*
- *Each URI begins with a scheme name that refers to a specification for assigning identifiers within that scheme e.g. http:, ftp:, mailto:, file:...*
- *The URI scheme defines the namespace*
- *Documented in informational RFC (e.g.: RFC 3986)*
- *Note that URIs are not PIDs!*

Handle System

- *Established in 1994*
- *Non-commercial decentralized identifier resolution system*
- *Governed and managed by DONA Foundation*
- *DONA is not-for-profit member organisation*
- *Members are Multi-Primary Administrators (MPA)*
- *ITU is one of the MPAs and if ever needed will be the "last MPA standing"*
- *Handles are unique and persistent identifiers for Internet resources*
- *Handles are of the form <prefix>/<suffix>*
- *Handle System consists of a repository, a resolution system and a registry*
- *Documented in informational RFCs*

DOI

- *Established in 1996*
- *DOI = Digital Object Identifier*
- *Centralised governance and shared infrastructure*
- *An implementation of the Handle System using reserved 10. prefixes*
- *Governed and managed by International DOI Foundation (IDF)*
- *IDF is not-for-profit member organisation*
- *DOI deposit through Registration Agencies (RAs)*
- *RAs are independent bodies offering services to assigners using DOIs*
- *All RAs must sign RA agreement on the use of IDF System (policies & guarantees)*
- *DOIs are actionable, interoperable, persistent links*
- *DOIs are of the form <10.xxxx>/<suffix> resolvable using https://dx.doi.org/*
- *International Standard: ISO 26324, 1 May 2012*

References:

[1] Clark, J., van Veenendaal, R., Ras, M., Lunghi, M. & Hakala, J. (2016). Persistent Identifiers for Digital Cultural Heritage. In Proceedings of the 13th International Conference on Digital Curation. Tutorial held at iPres 2016, Bern (309-310). Bern, Switzerland: Swiss National Library.