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Edition 0.3

Obsolete

Author date: 2023-09-28

Archive date: 2024-12-09

Citation:
E. Castedo Ellerman (2023) "Why try Digital Succession Identifiers" https://perm.pub/wk1LzCaCSKkIvLAYObAvaoLNGPc/0.3

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Why try Digital Succession Identifiers

E. Castedo Ellerman (castedo@castedo.com)

Abstract

STAGE: Draft.

AUDIENCE: Researchers capable of signing git commits from the command line who would like some of their research documents to enjoy new benefits described in this document.

SUMMARY: The Digital Succession Identifier (DSI) is a new kind of persistent identifier for bibliographic references. For research communication, a DSI provides novel benefits such as the identification of research documents that are amendable by the author. A DSI together with JATS XML can also provide a new combination of benefits found in traditional academic publishing, preprint servers and PubMed Central, while avoiding some of their limitations.

Introduction

For an author, a key benefit of a Digital Succession Identifier (DSI) is the ability to identify content yet to be determined by the author. At the same time, a DSI also provides one of the great features of academic publishing, specifically, the ability for other researchers to reference a static archived article long into the future. When a DSI is combined with JATS XML [1], a new combination of benefits of the current academic publishing ecosystem are enabled:

- a persistent identifier for bibliographic references (like a DOI [2]),
- an amendable sequence of documents (like versioned preprints),
- and a choice of reading format (web page or PDF).

In addition to that new combination, a DSI also provides completely new benefits in research communication:

- a DSI can be author-owned and not tied to any particular website or archive,
- fine-grained versioning in the form of *multilevel edition numbering* (described later in this document), and
- a DSI can be created and tied to a document before either is publicly shared.

Amendable digital successions

Like textbooks and preprints, but not traditional journal articles, digital successions consist of multiple editions (or versions) of a digital object. A simple initial application is having the digital objects be PDF files.

A DSI can refer to a specific edition (version) or an entire sequence of editions within a digital succession. If a DSI refers to a specific edition, that edition does not change, like with traditional journal articles. For instance, **dsi:**aEBkfZe1f4ooWcgt2Qs9gjtmkFo/0.1 identifies the first archived draft of this document, edition 0.1. This edition 0.1 will never change. But if a DSI refers to many editions in a digital succession, then the author can amend the previous editions. For example, **dsi:**aEBkfZe1f4ooWcgt2Qs9gjtmkFo refers to all editions of this document, including future editions yet to be determined by the author.

Author-owned identifiers

A digital succession is a work by an author, as declared by the author as it changes over time. Unlike a traditional journal article, a digital succession is not a single final published result. In contrast to multiple versions of preprints on a preprint servers, a digital succession is not a sequence of deposits at a particular preprint server. A DSI identifies an authors work independent of where it might be stored or viewed.

The editions of a digital succession might span preprints found on multiple preprint servers, a published journal article and amended editions on new venues of scholarly communication. A digital succession and its DSI also do not need a central registry or authority to be created and tied together. A DSI can be used privately to identify a digital succession before it is shared publicly.

An author determines what editions are in a digital succession because a digital succession is digitally signed by the author, specifically with a PGP key [3] of the author.

Choice of reading format

Although technically independent of the DSI standard, JATS XML is combined with DSIs in software and services under development, such as the perm.pub pilot project. The combination DSI plus JATS gives readers the choice of modern web page or PDF formats, as offered by PubMed Central and journal websites.

Multilevel edition numbering

In the simplest edition numbering scenario, edition numbers are just positive integers, like with textbook editions and preprint version numbers. An optional benefit of digital successions is multilevel edition numbering. Multilevel numbering is found in the numbering of chapters, sections, and subsections (e.g. chapter 2, section 2.4, subsection 2.4.3). Multilevel numbering is also found in software release versions (e.g. software release 2.19.2).

Multilevel numbering is particular useful when amending editions with a binary change in the digital object (e.g. PDF file), but not in the intellectual content (e.g. the text in the PDF). The DSI specification does not specify the meaning of different levels in edition numbers apart from larger integers coming after smaller integers and higher level edition numbers identifying subordinate sequences of lower level edition numbers (e.g. the entire sequence of editions numbers 2.1, 2.2, 2.3, ..., can be identified by edition number 2).

Use of zeros in edition numbers

Zeros are valid at any level in an edition number, except at the end. An edition number with a zero at any level carries special meaning. These editions are *unlisted* which means they are accessible but should not be listed by default. This is similar conceptually to hidden files of a folder in a file systems. Authors may choose to use this feature in a variety of ways. One way is to use it for editions that are not intended for the main target audience. For instance, they may be used for testing purposes, for drafts, or preliminary releases.

Conclusion

Digital Succession Identifiers (DSIs) enable three novel benefits to authors of research documents. The fundamental benefit is that DSIs can be author-owned identifiers. A secondary benefit is multilevel edition numbering. The third benefit is a new combination of existing benefits: persistent identification, amendability and a choice of reading format. However, enabling choice of reading format requires combining DSIs with an application such as digital successions of JATS XML.

In addition to reaping the benefits of DSIs, early adopters can help improve the definition of the DSI standard and the direction of software and services being developed around the DSI standard. Software for DSIs is under development at gitlab.com/perm.pub/hidos and an early trial service is available as the perm.pub pilot project. Email the author Castedo Ellerman to become an early adopter.

For technical details on how DSIs are implemented, see the Digital Succession Identifier Specification.

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