

Digital Object Identifier (DOI) in EXFOR

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DOI – Digital Object Identifier

- A **digital object identifier (DOI)** is a persistent identifier or handle used to identify objects uniquely, standardized by the International Organization for Standardization (ISO).
- A DOI aims to be "resolvable", usually to some form of access to the information object to which the DOI refers.
- **Information object:** article, data set, ...
- The DOI for a document remains fixed over the lifetime of the document, whereas its location and other **metadata** may change.

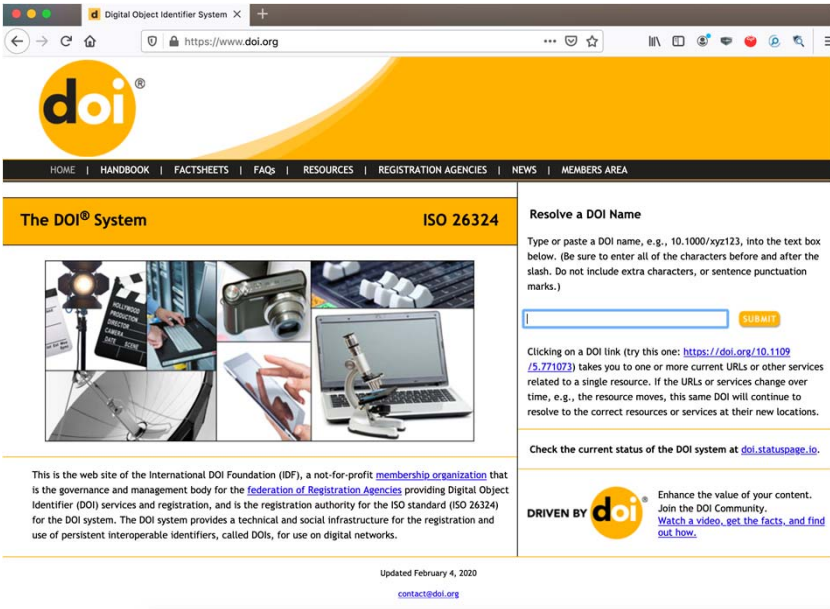
Digital object identifier



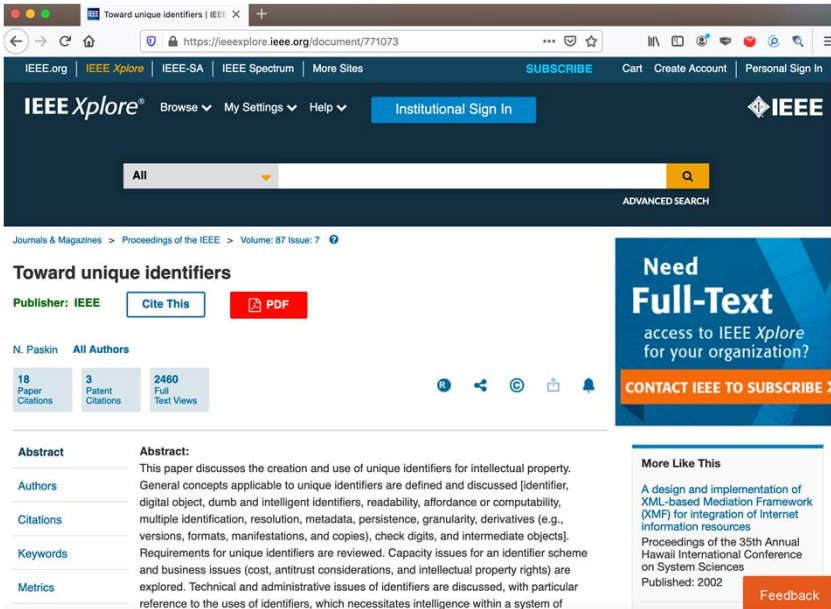
Acronym	DOI
Organisation	International DOI Foundation
Introduced	2000
Example	10.1000/182 
Website	www.doi.org  

Digital Object Identifier System

- Clicking on a DOI link (try this one: <https://doi.org/10.1109/5.771073>) takes you to one or more current URLs or other services related to a single resource.



The screenshot shows the homepage of the Digital Object Identifier System (DOI). The browser address bar displays <https://www.doi.org>. The page features a yellow header with the DOI logo and a navigation menu including HOME, HANDBOOK, FACTSHEETS, FAQs, RESOURCES, REGISTRATION AGENCIES, NEWS, and MEMBERS AREA. Below the header, there is a section titled "The DOI® System" with the ISO 26324 standard. A central image shows various digital devices and a person using a laptop. To the right, there is a "Resolve a DOI Name" section with a text input field and a "SUBMIT" button. Below this, there is a paragraph explaining that clicking on a DOI link (try this one: <https://doi.org/10.1109/5.771073>) takes you to one or more current URLs or other services related to a single resource. At the bottom, there is a "DRIVEN BY doi" logo and a link to "contact@doi.org".



The screenshot shows the IEEE Xplore website. The browser address bar displays <https://ieeexplore.ieee.org/document/771073>. The page features a dark blue header with the IEEE Xplore logo and a navigation menu including IEEE.org, IEEE Xplore, IEEE-SA, IEEE Spectrum, More Sites, SUBSCRIBE, Cart, Create Account, and Personal Sign In. Below the header, there is a search bar with a dropdown menu set to "All" and a search button. The main content area displays the title "Toward unique identifiers" and the publisher "IEEE". There are buttons for "Cite This" and "PDF". Below this, there is a table with statistics: 18 Paper Citations, 3 Patent Citations, and 2460 Full Text Views. The abstract section is visible, starting with "Abstract: This paper discusses the creation and use of unique identifiers for intellectual property." On the right side, there is a promotional banner for "Need Full-Text access to IEEE Xplore for your organization?" with a "CONTACT IEEE TO SUBSCRIBE" button. At the bottom right, there is a "More Like This" section with a "Feedback" button.

Benefits of DOIs

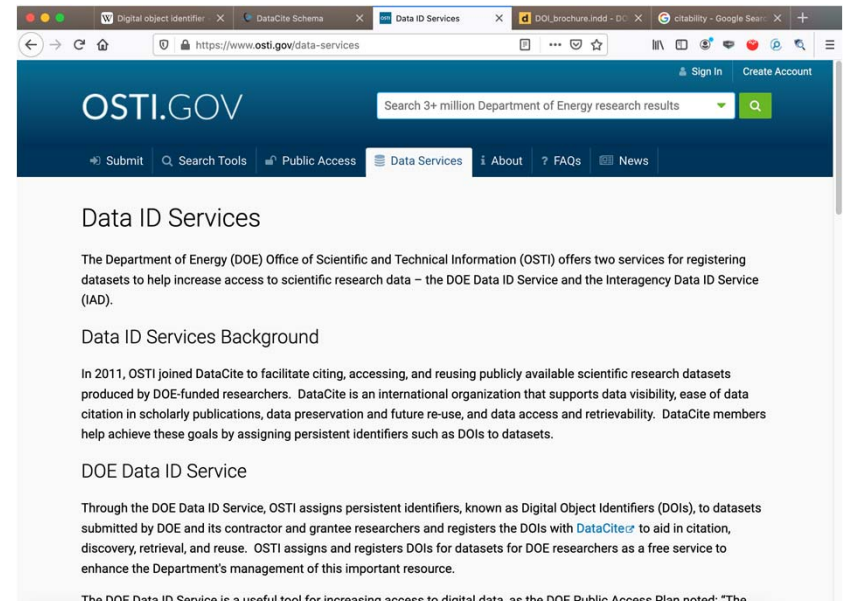
- DOIs identify content **permanently**. And as they are coupled with metadata, they can be modified over time to keep track of the locations and characteristics of the objects they identify, both for you and your users.
- You benefit from **efficient management** and **accurate tracking**, as well as gaining the ability to more easily automate processes and collaborate with partners in your community.
- And that means **adding value** to your content:
 - Searchability
 - Citability (Any data with a DOI can be cited directly)
 - Direct data downloads

If you use the internet to manage content or information about assets, you can benefit from being



How to Obtain DOI in the DOE

- OSTI: U.S. Department of Energy (DOE) Office of Scientific and Technical Information.
- OSTI “DOE Data ID Services” provides DOIs for DOE data & publications (<https://www.osti.gov/data-services>).
- Can obtain DOIs by automation (without a human applying “manually” for each one).
- OSTI registers DOIs as a member of **DataCite** provider.



DataCite

Table 1: DataCite Mandatory Properties

ID	Property	Obligation
1	Identifier (with mandatory type sub-property)	M
2	Creator (with optional name identifier and affiliation sub-properties)	M
3	Title (with optional type sub-properties)	M
4	Publisher	M
5	PublicationYear	M
10	ResourceType (with mandatory general type description sub-property)	M

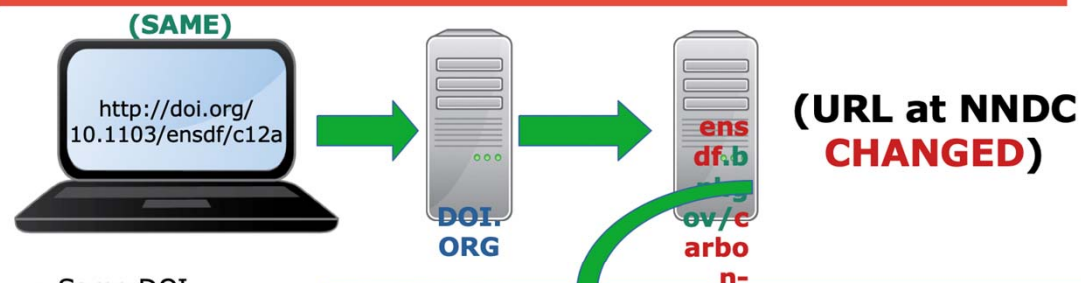
6	Subject (with scheme sub-property)	R
7	Contributor (with type, name identifier, and affiliation sub-properties)	R
8	Date (with type sub-property)	R
9	Language	O
11	AlternateIdentifier (with type sub-property)	O
12	RelatedIdentifier (with type and relation type sub-properties)	R
13	Size	O
14	Format	O
15	Version	O
..	..	-

- DataCite (<https://datacite.org/index.html>) is a leading global non-profit organisation that provides persistent identifiers (DOIs) for research data and other research outputs.
- Locate, identify, and cite research data with the leading global provider of DOIs for research data.
- DataCite **Metadata Schema v4.3 Properties**:
 - DataCite Mandatory Properties
 - DataCite Recommended and Optional Properties

DOI for ENDF & ENSDF Databases

- DOE suggested to develop DOI for nuclear data sets.
- ENSDF Workshop, April 27, 2021.
- DOI proposal by A. Hayes, case of ^{12}C adopted data.
- Potential problem: lack of metadata in ENSDF, NSR and PDFs are needed.

Persistence



- Same DOI
- Points to new URL (address)
- Same document retrieved
- Works for data sets too

```

12C X9160(A,8BE)
12C cL DICT$({+3}He,d3a) (12)He,d3|a)
12C cL E(A) See discussion on the charge-dependent matrix
12C 2cL element between {+12}C*(12710,15110) in Table 12.18 (2017Ke05).
12C cL E(B) See discussion in (1983Ne11)
12C cL E(D) Decay mode not specified
12C cG E From level energy difference; recoil correction applied
12C cG E(C) |G data based on |G{-|g0} of (1983De53) and on branching
12C 2cG ratios of (1972A103): {+12}c*(15110) to {+12}c*(0,4439,7654,12710)
12C 3cG are (92 {i2})%, (2.3 {i3})%,
12C 4cG (2.6 {i7})%, (1.4 {i4})%, respectively. In addition, an undetected
12C 5cG branching of 1.6% to {+12}c*(10300) is indicated in the |b{+-} decay
12C 6cG work of (1972A103). See also (1980Aj01).
12C CL T$LABEL=WIDTH
12C PN
12C Q -17338.1 1018720.71 615956.681 -7366.59 4 2017WA10
12C L 0 0+ STABLE
  
```

EXFOR Database

- Is it needed for EXFOR
 - Would it increase the EXFOR value?
 - Is it possible to accomplish?
- EXFOR-iTree project X4± by V. Zerkin (IAEA) already couples metadata and a data set.
- We propose a proof of concept study for EXFOR DOIs using the X4± results.
- Results will be presented at the next NRDC Heads Meeting in 2022.



EXFOR-iTree

https://www.nndc.bnl.gov/exfor/servlet/X4:

Welcome to EXFOR-iTree project X4±

V.Zerkin, IAEA-NDS, began:30-Nov-2008

EXFOR file is presented as an interactive tree with nested structure and possibility to hide/show descriptive information and data.

- EXFOR file
 - ENTRY 23467 2019, A.Wallner+ last-updated: 2020-09-09
 - SUBENT 23467001 last-updated: 2020-09-09
 - BIB #bibliographic and descriptive information
 - TITLE
 - Stellar and thermal neutron capture cross section of ⁹Be
 - AUTHOR
 - INSTITUTE
 - REFERENCE
 - METHOD
 - ADD-RES
 - HISTORY
 - NOCOMMON
 - SUBENT 23467006 last-updated: 2019-02-26
 - BIB #bibliographic and descriptive information
 - REACTION
 - (40-ZR-94(N,G)40-ZR-95,,SIG)
 - ANALYSIS
 - ERR-ANALYS
 - STATUS
 - NOCOMMON
 - DATA 3x1
 - Legend
 - Data

EN	DATA	DATA-ERR
EV	MB	MB
0.0253	8.31	0.52

Page generated: 2021-04-30,12:19:53 by X4sGetSubent on www.nndc.bnl.gov
Project: "Multi-platform EXFOR-CINDA-ENDF", V.Zerkin,IAEA-NDS, 1999-2019
Request from: 69.120.83.223

The International Atomic Energy Agency: (<https://www.iaea.org/about/mission>)

- is an independent intergovernmental, science and technology-based organization, in the United Nations family, that serves as the global focal point for nuclear cooperation;
- assists its Member States, in the context of social and economic goals, in planning for and using nuclear science and technology for various peaceful purposes, including the generation of electricity, and facilitates the transfer of such technology and knowledge in a sustainable manner to developing Member States;
- develops nuclear safety standards and, based on these standards, promotes the achievement and maintenance of high levels of safety in applications of nuclear energy, as well as the protection of human health and the environment against ionizing radiation;
- verifies through its inspection system that States comply with their commitments, under the Non-Proliferation Treaty and other non-proliferation agreements, to use nuclear material and facilities only for peaceful purposes.