

Persistent Identifiers

Reinhard Altenhöner

Die Deutsche Bibliothek, Frankfurt am Main, Germany

altenhoener@dbf.ddb.de

Table of Contents

- Introduction: persistent identifiers
- URN: a standard in the world of internet
- Structure and realization(s)
- PI in Praxis: the project Epicur in DDB
- Conclusions/Summary



Identification of cars

Number plate

- non stable
- can be a fake
- small functionality
- non global
- opaque

Chassis number

- reliable
- persistent
- appropriate functionality (resolution!)
- global
- transparent
- unique

The daily experience

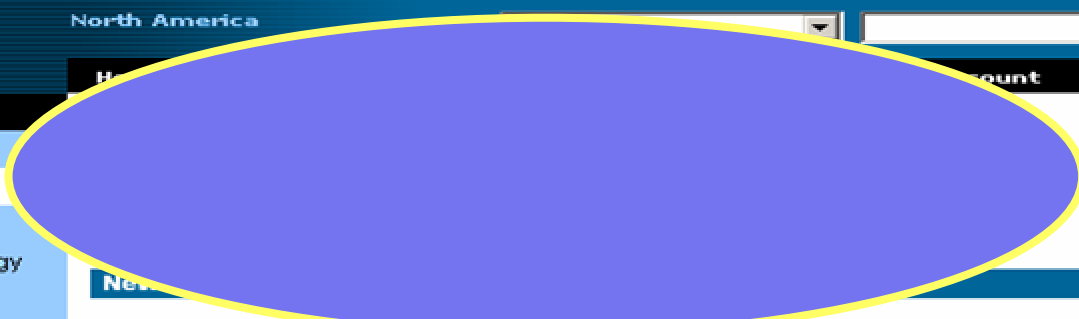


IBM Global Services: Error - File not found - Microsoft Internet Explorer

Datel Bearbeiten Ansicht Favoriten Extras ?

Zurück Suchen Favoriten Medien

Adresse <http://www-1.ibm.com/services/us/index.wss/mp/imc/xt/a1002666>





North America

Search

Select a country

IBM Global Services

Industries

Business & technology topics

IT services

Training

Conferences & events

Services A-Z

IBM Global Services search

Related links:

IBM Business Partners

Career opportunities

We have recently re-designed our [IBM Global Services](#) site to allow you to gather the information that is important to you based on your interests and needs. Accordingly, you can review information regarding our service offerings in terms of

- the [Industries](#) they support,
- the [Business & technology topics](#) they address, or
- the overall [IT service categories](#) into which they fall.

With our [Services A-Z](#) page, you can also review a comprehensive list of our service offerings if you know the type of offering in which you are interested.

A little help finding the information you're after

If you've come to this page as a result of choosing a bookmarked page from our previous site, we can hopefully help you easily find similar pages in the new site.

If you were interested in...	please review this new page
Application Management Services	Application management
Business Consulting Services	Business Consulting Services
Business Continuity and Recovery Services	Business continuity and recovery
e-business Hosting Services	Outsourcing / Hosting
Networking Services	Networking
Integrated Technology Services	IT infrastructure services
Strategic Outsourcing Services	Outsourcing / Hosting

Start Microsoft PowerPoint - [...] Dokument1 - Microsoft ... IBM Global Services: E...

Persistence in the WEB

- 16% links after 6 months (T.Dowling)
 - 50% after 24 months (British Library)
 - 87% since 1998 (OCLC)
- are ***broken links***
- 13% of article publications: after 27 months not available (Science)
-
- **So we need: An adequate service to handle the changing locators in the WEB → Persistent Identifiers**

Features of the expected service

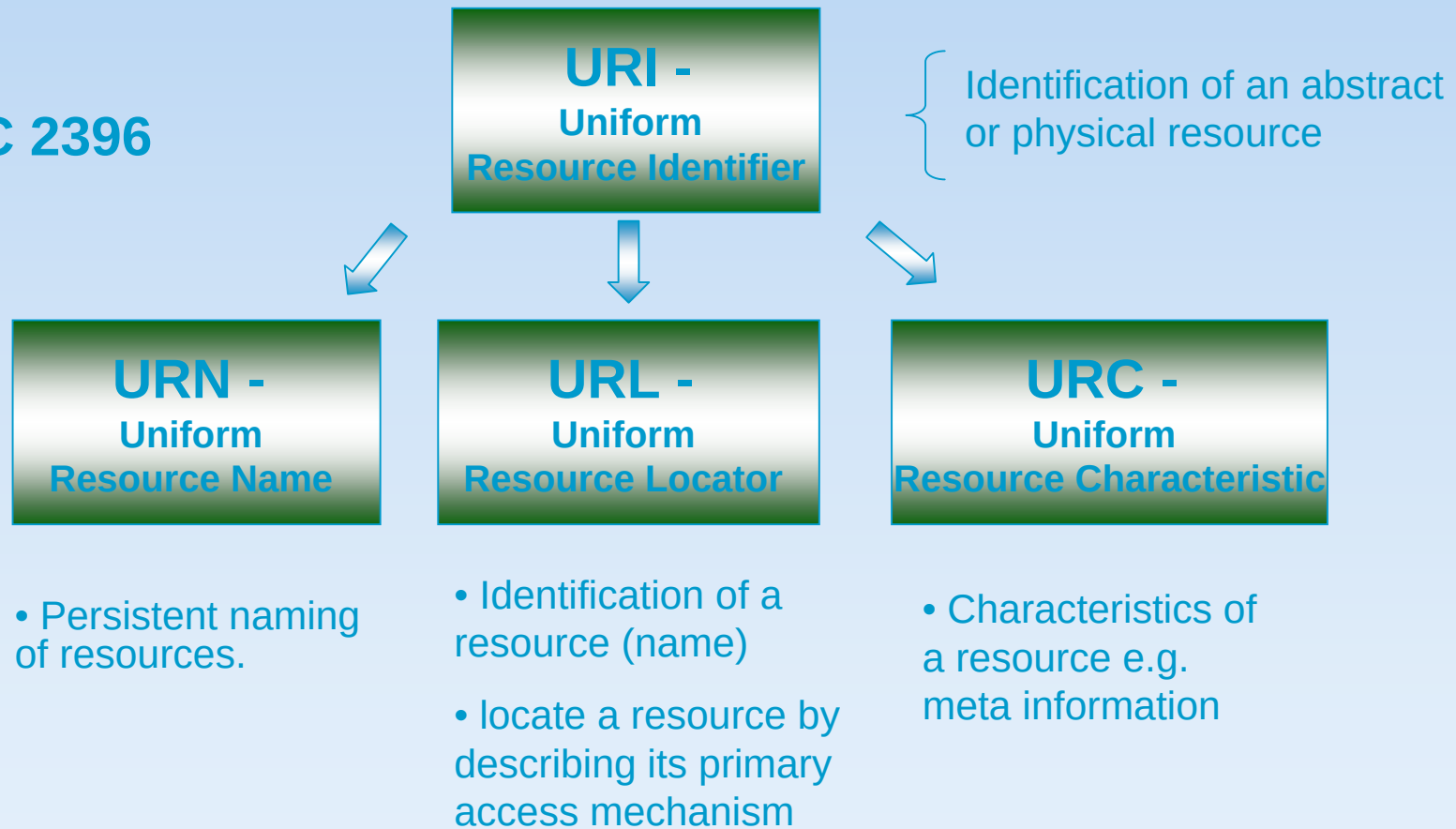
- unique
- global
- resolvable
- reliable
- And: Governance → policy
- And: Resolution agencies
- And: Registration agencies

History & standardization

- (1966: ISBN)
- 1994: World Wide Web (WWW)
- Tim Berners-Lee: „universal document identifier“ (1992!)
- 1994: RFC 1738 Uniform Resource Locator (IETF)
- 1998: URI Generic Syntax
- 2004: URI:info (first draft)

Terminology

RFC 2396

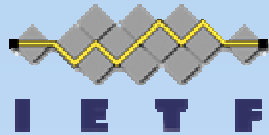


Registered URI-Schemes

Scheme Name -----	Description -----	Reference -----
urn http://www.iana.org/assignments/urn-namespaces	Uniform Resource Names	[RFC2141]
ftp	File Transfer Protocol	[RFC1738]
http	Hypertext Transfer Protocol	[RFC2616]

[... more than **40** URI SCHEMES]

<http://www.iana.org/assignments/uri-schemes>



„Uniform Resource Name“ (URN)

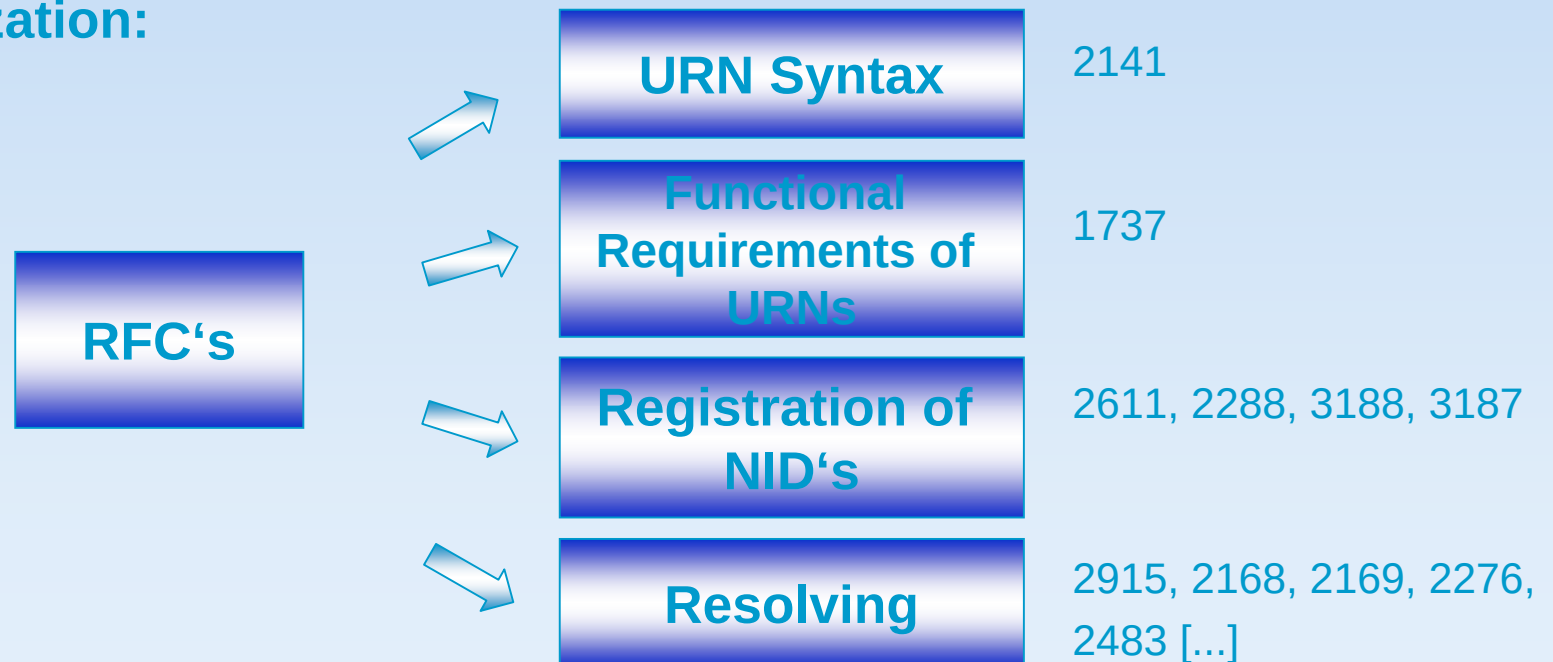


Syntax: **URN:NID:NISS** **Example:** urn:nbn:de:gbv:089-321752945

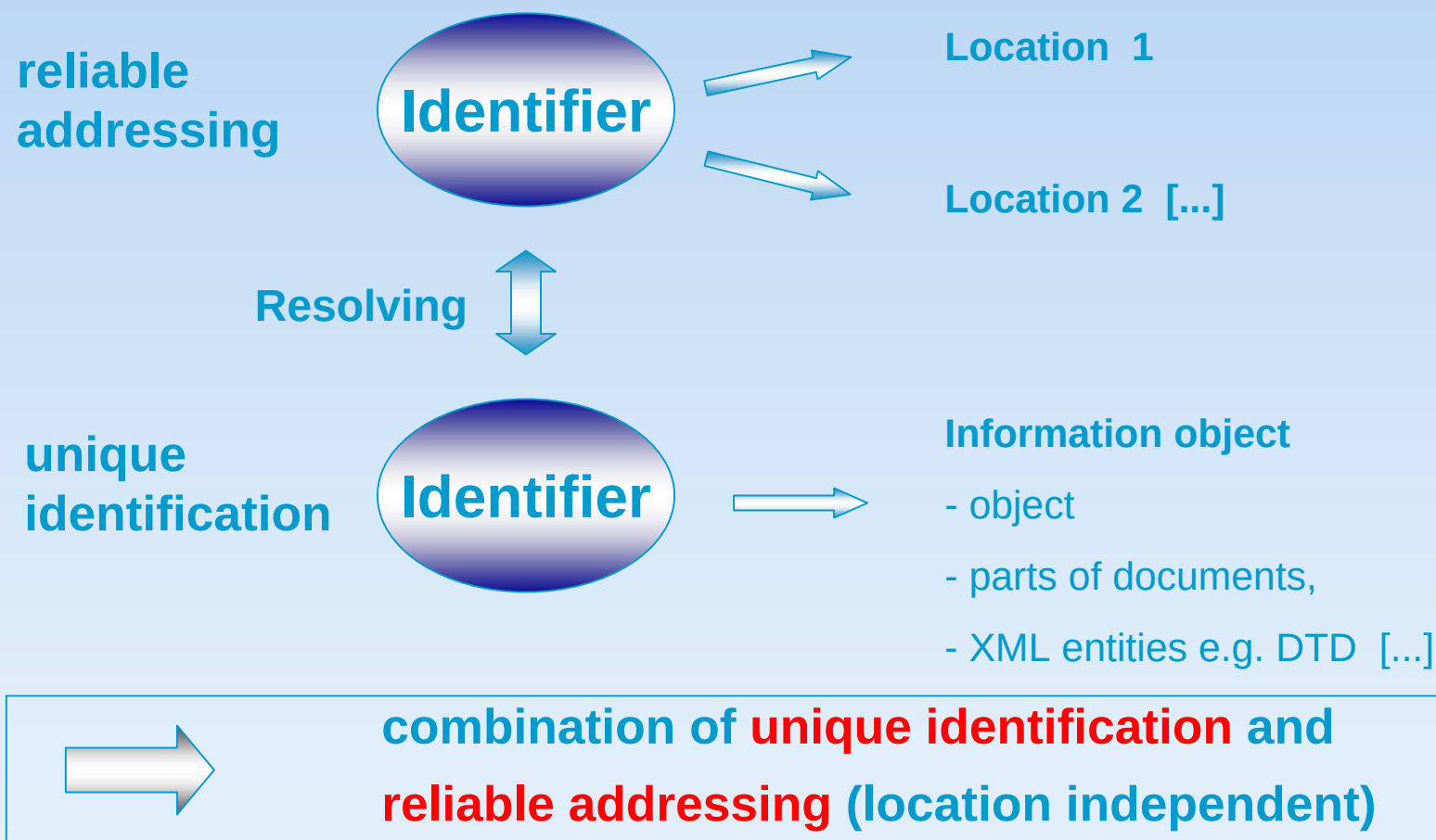
NID: name space identifier e.g. ISBN, ISSN und NBN

NISS: name space specific string

Standardization:



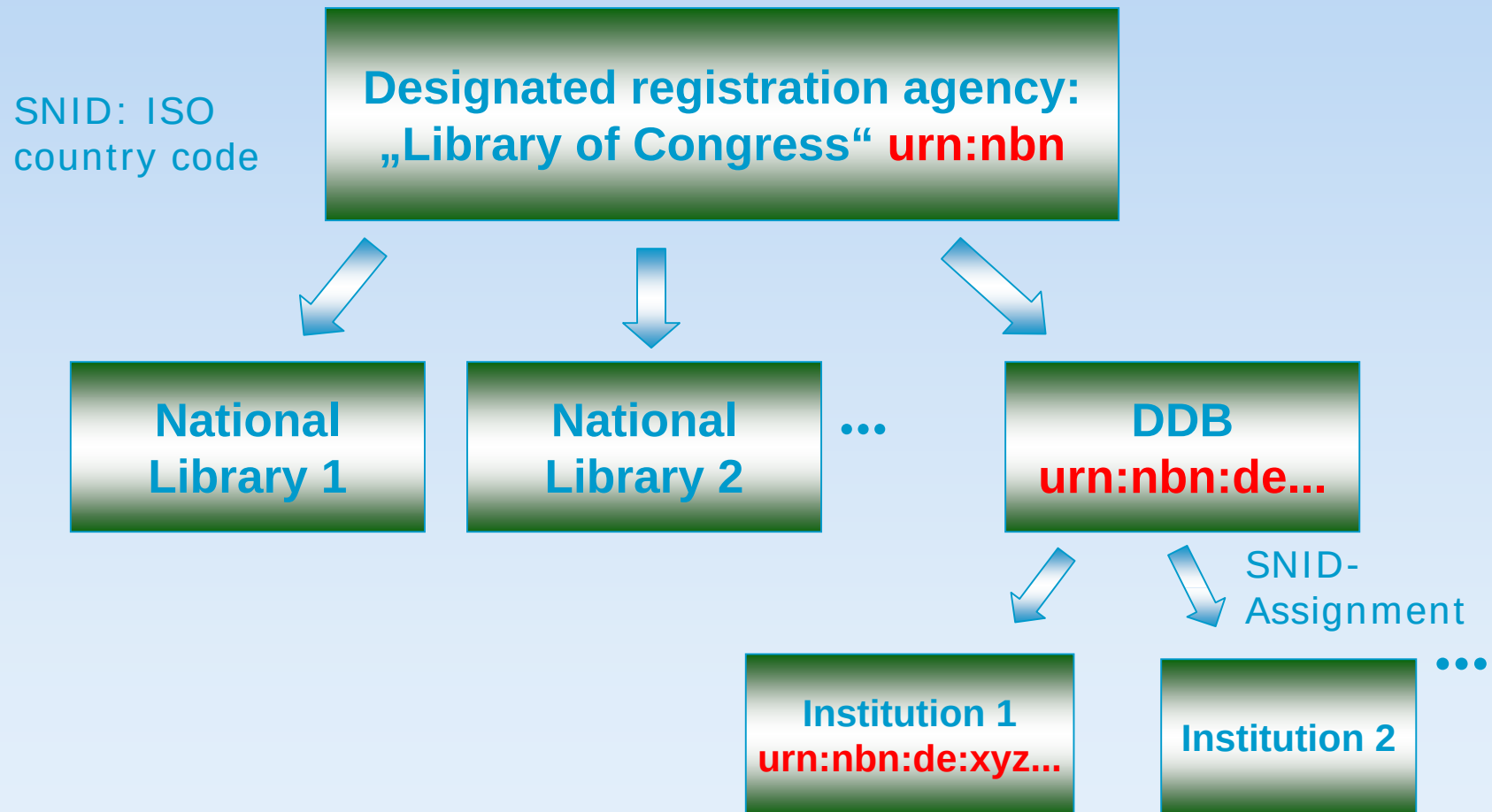
Scope of Persistent Identifiers



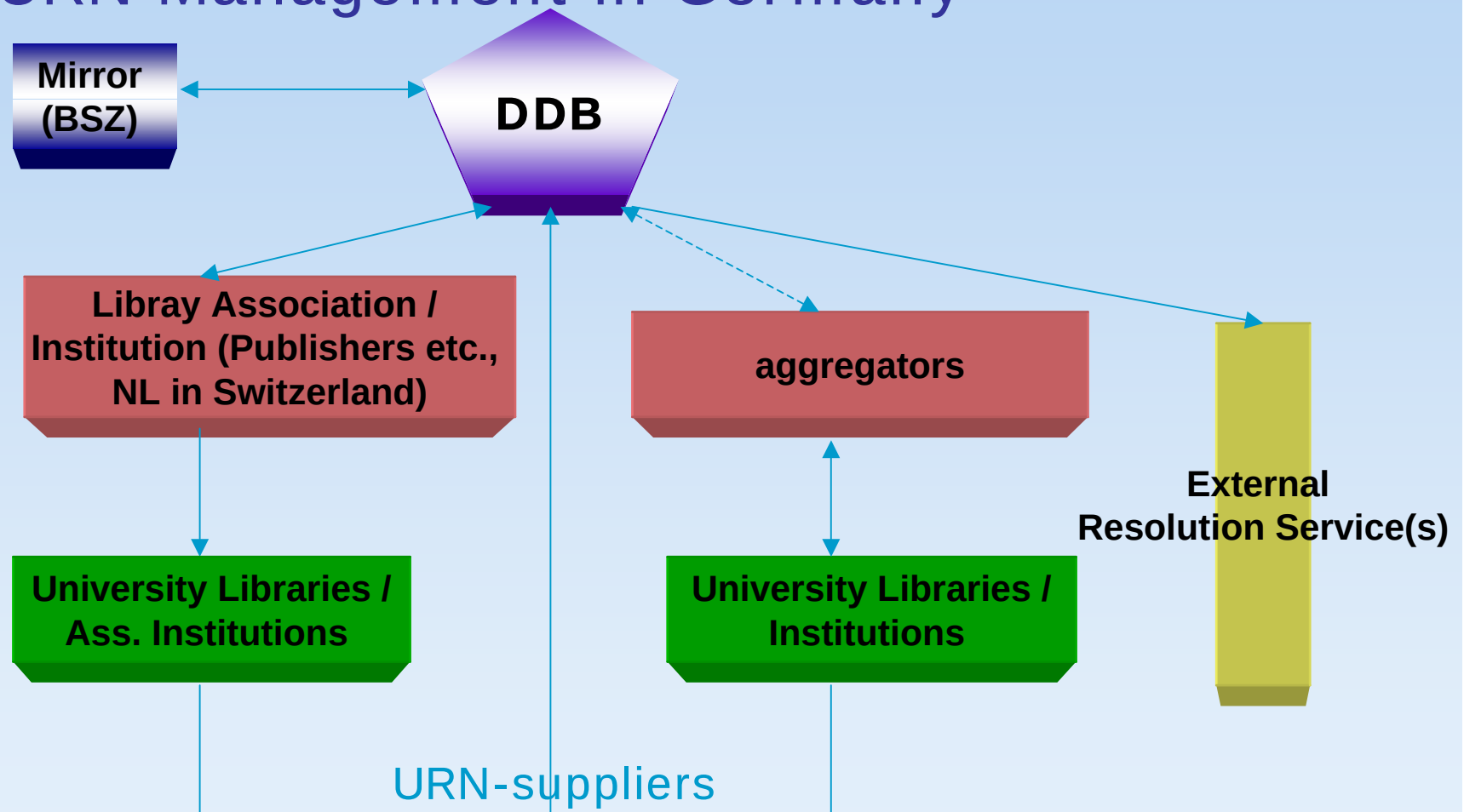
Persistent Identifiers currently in use (partly propriete)

DOI	- Digital Object Identifier	(DOI-F)
Handle	- Handle System	(CNRI)
 URN	- Uniform Resource Name	(IETF)
ARK	- Archival Resource Key	(CDL)
PURL	- Persistent Uniform Resource Locators	(OCLC)

The international name space „NBN“



Technical and organisational Infrastructure of URN Management in Germany



URN Implementation at Die Deutsche Bibliothek: URN Registration Process

University library

URN, Metadata,
Online Theses

Die Deutsche Bibliothek

central interim
storage at DDB

deposit
server

catalogue
(DDB)

NBN
management
system

URN as a part of
the document
itself

URN is a
component of
title record

URN-Assignment – materials/objects in DDB

Online dissertations	urn:nbn:de:gbv:089-3321752945
Publisher publications	urn:nbn:de:0002-0104
Reports	urn:nbn:de:0001-00021, urn:nbn:de:kobv:b103-000011
Conference proceedings	urn:nbn:de:bsz:93-opus-15563
Journals	urn:nbn:de:1111-2004020921
Articles	urn:nbn:de:bsz:93-opus-13482
Videos	urn:nbn:de:0001-00099, urn:nbn:ch:bel-2319
Annual reports	urn:nbn:de:kobv:b103-030012
Monographs	urn:nbn:de:bsz:93-opus-13983
Digitized materials	urn:nbn:de:kobv:b103-030026
Lectures	urn:nbn:de:1111-2004033057
XML namespace	urn:nbn:de:1111-2004033116

Online Public Access Catalogue

The screenshot shows a web browser window titled "DBF-OPAC - Search Full Title - Microsoft Internet Explorer". The address bar shows the URL: <http://opac.dbf.ddb.de:7700/SET=3/TTL=2/SHW?FRST=8>. The page header identifies the institution as "Deutsche Bibliothek Frankfurt am Main" with a copyright notice "Pica © 1999-2004".

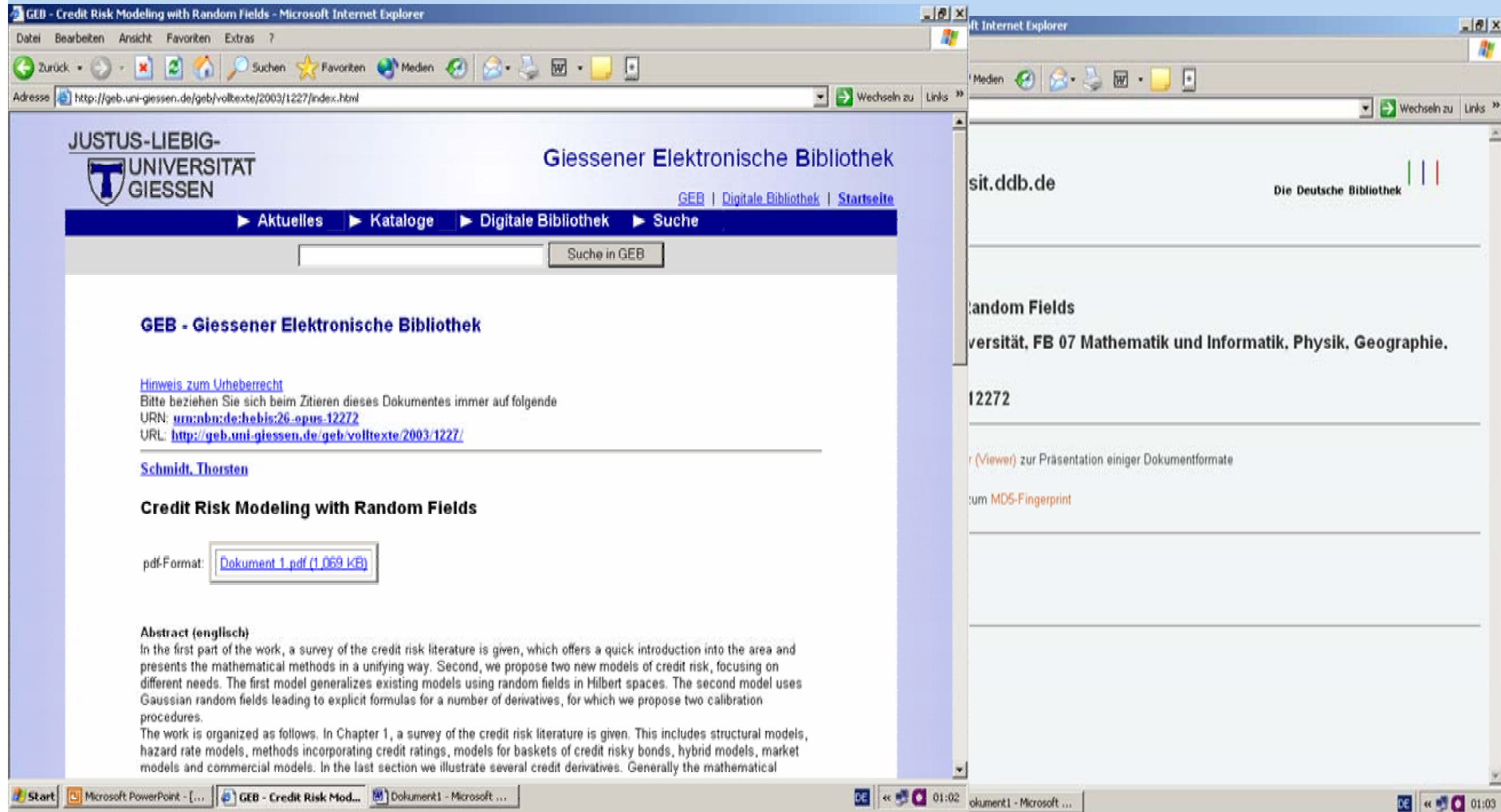
The search interface includes a search bar with the text "Suchen UND" and a dropdown menu set to "Alle Wörter <woe>". The search term "schmidt" is entered, and the "Suchen" button is visible. Below the search bar, there is a link to "Einschränkende Suchoptionen zurücknehmen".

The search results are displayed under the heading "Suchen UND (Alle Wörter <woe>) : schmidt". It indicates that there are 169 hits and shows the 8th result. The result details are as follows:

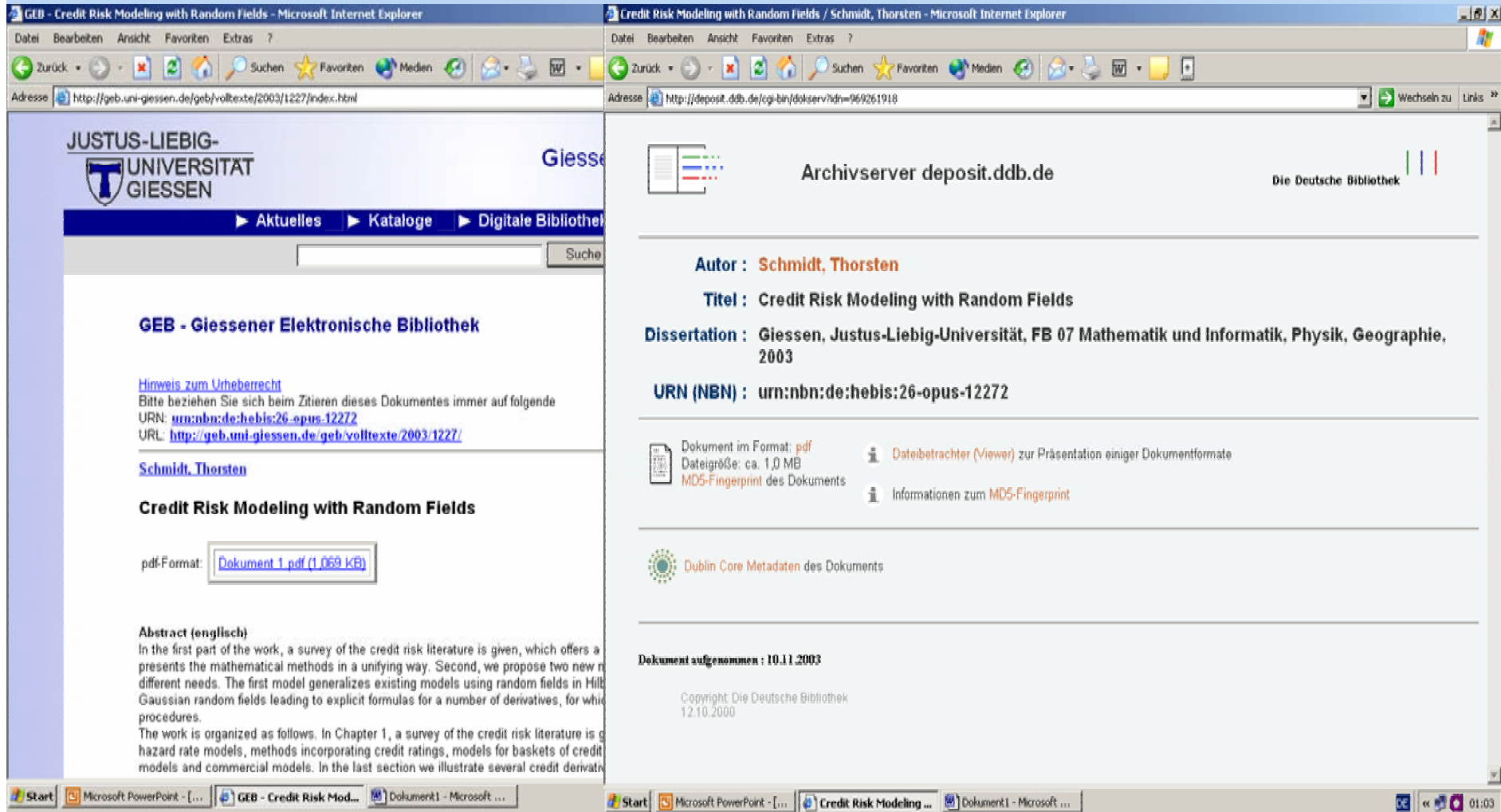
- Titel:** Credit risk modeling with random fields [Elektronische Ressource] / vorgelegt von Thorsten Schmidt
- Verfasser:** Schmidt, Thorsten
- Erscheinungsjahr:** 2003
- Umfang/Format:** Online-Ressource
- Hochschulschrift:** Gießen, Univ., Diss., 2003
- Persistent Identifier:** [urn:nbn:de:hebis:26-opus-12272](http://nbn-resolving.de/urn/resolver.pl?urn=urn:nbn:de:hebis:26-opus-12272)
- URL:** [Archivserver Der Deutschen Bibliothek](#)
- Schlagwörter:** [Kreditrisiko](#) ; [Stochastische Differentialgleichung](#) ; [Gauß-Zufallsfeld](#) ; Online-Publikation
- Sachgruppe:** 510 Mathematik ; 330 Wirtschaft

A red arrow points from the Persistent Identifier to a text box containing the URL: <http://nbn-resolving.de/urn/resolver.pl?urn=urn:nbn:de:hebis:26-opus-12272>. The interface also includes navigation buttons like "Zurück" and "Weiter", and a sidebar with "Recherche", "Hilfe", and "Ende".

The document



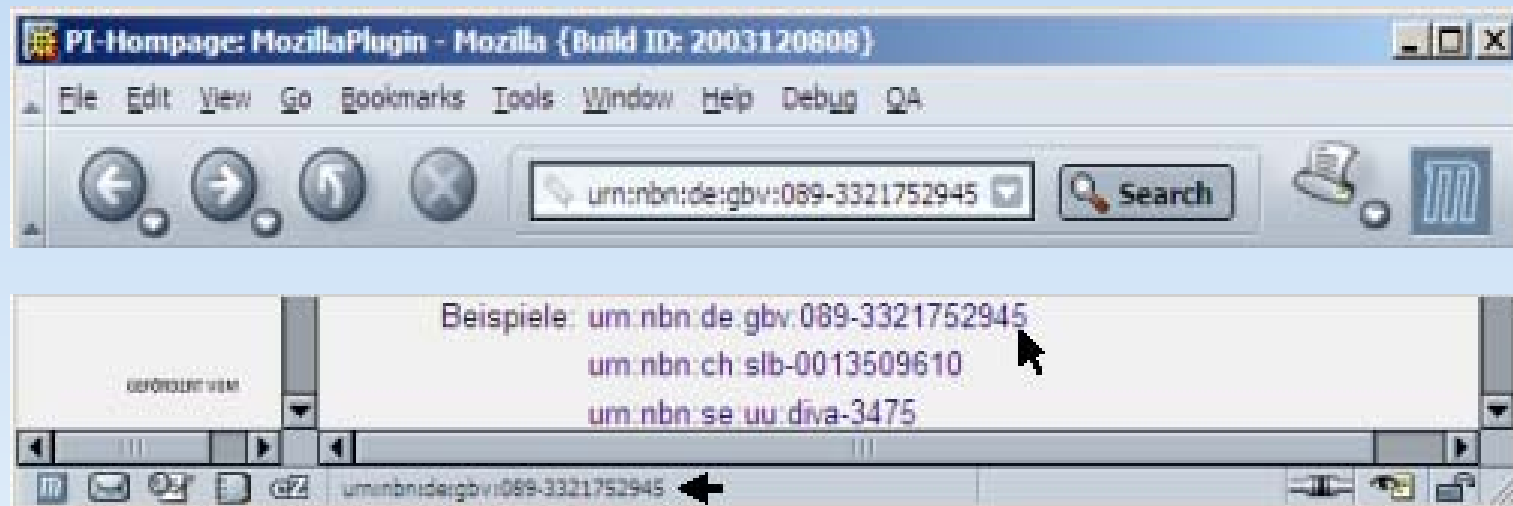
The document



The screenshot shows two side-by-side browser windows. The left window displays the 'GEB - Giessener Elektronische Bibliothek' website, which is part of the Justus-Liebig-Universität Gießen. It shows the title 'Credit Risk Modeling with Random Fields' by Thorsten Schmidt, a PDF document (1.069 KB), and an abstract in English. The right window shows the 'Archivserver deposit.ddb.de' page for the same document, providing metadata such as the author (Schmidt, Thorsten), title, dissertation details (Giessen, Justus-Liebig-Universität, FB 07 Mathematik und Informatik, Physik, Geographie, 2003), and the URN (urn:nbn:de:hebis:26-opus-12272). It also includes links for the document format (PDF), file size (ca. 1.0 MB), MD5 fingerprint, and Dublin Core metadata. The document was recorded on 10.11.2003.

The client (Browser) perspective ...

Plugin



<http://www.persistent-identifier.de/?link=550>

URN-Strategy of DDB

To what can a URN (nbn:de) be assigned and managed?

- objects **currently** archived by Die Deutsche Bibliothek
- objects to be archived in Die Deutsche Bibliothek **in the future**
- objects which will be administered on **certified document servers**
 - Quality criteria e.g. URL-Updating
 - Endeavors by DINI
http://www.dini.de/dini/zertifikat/dini_certificate.pdf
 - perspective of long term preservation
(BMBF project: <http://www.langzeitarchivierung.de>)

URN-Strategy

Principles

- URNs are **valid** after their registration at Die Deutsche Bibliothek
- **URN-Registration** within **24 hours** of their publication on a document server
- **URL-Updating** is mandatory
- In case of a distributed object storage URN must be transferred as part of the
 - metadata or as access mechanism
 - [...]

Recommendations

- URNs should be assigned **as closely as possible to the object.**
- URNs should be a component of **metadata.**
- A character set according to **RFC 1738** for **URLs** should be used.

URN-Management: Additional Transfer Interfaces

- Manual URN administration
 - Web-Interface
<<http://nbn-resolving.org/login.php>>
- Automated URN administration
 - E-Mail-Attachment
 - OAI 2.0
- Integration into administration systems for digital library tools
 - OPUS
 - MyCoRe

URN-Service

PI-Hompage: 610-ResolverDemo - Microsoft Internet Explorer

Adresse <http://www.persistent-identifier.de/?link=610&lang=en> Wechseln zu

Persistent Identifier

...eindeutige Bezeichner für digitale Inhalte...

Home News Overview Activities Service Sitemap Imprint

Home
News
Overview
+ Activities
+ Service
Sitemap
Imprint

Demonstration of the URN (NBN:DE) resolver at Die Deutsche Bibliothek

Please enter the URN:

Resolve URN

Further Examples

- urn:nbn:de:gbv:089-3321752945
- urn:nbn:ch:bel-9478
- urn:nbn:ch:bel-9039
- urn:nbn:se:uu:diva-3475
- urn:nbn:hu-3006

Return options for URNs ("nbn:de" and "nbn:ch")

- ☐ list of URLs
- ☒ document directly

Comments

Please, choose whether you would like to receive a list of URLs or the document directly:

- ☐ document
If you select "document" you will receive the online publication directly.
- ☐ list
All saved URLs belonging to the URN will be returned in a list of URLs

GEFÖRDERT VON
 Bundesministerium für Bildung und Forschung

Summary

Persistent identifiers offer a tested possibility to provide reliable access to digital objects. So they will become more and more important in the context of long-term preservation.

Questions? Need for further information?

- altenhoener@dbf.ddb.de
- www.persistent-identifier.de