

5 April 2016

## Data Service: Changes in the RDF format from 17 May 2016 (Export Release 02/2016)

### 1. Release schedule

Dear Sir or Madam

As part of the scheduled export format release planning<sup>1</sup> of the German National Library (DNB), the next changes in the conversion and the data modelling will take place on 17 May 2016. (There may be disruptions to the interfaces and the Data Shop between 08:00 and 12:00 a. m. on the day of the technical changeover.)

Mirroring the schedule of the export releases, updated full copies of the Integrated Authority File (GND) and the bibliographic data of the DNB will be made available for downloading in RDF/XML, Turtle and JSON-LD format in February, June and October<sup>2</sup>.

### 2. Linked Data Service – General

The RDF data delivered by the Linked Data Services of the DNB and the German Union Catalogue of Serials (ZDB) have always been provided under Creative Commons Zero<sup>3</sup> (CC0 1.0) licence. As this was previously only apparent from the respective websites<sup>4</sup>, the HTTP header "Link" (including the licence details) is to be added to the RDF descriptions from Release 02/2016:

Link: <<http://creativecommons.org/publicdomain/zero/1.0/>>; rel="license"

There are also plans to convey the use licence in the RDF data in a future release.

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<sup>1</sup> <https://wiki.dnb.de/x/wgcbBQ>

<sup>2</sup> <http://datendienst.dnb.de/cgi-bin/mabit.pl?userID=opendata&pass=opendata&cmd=login>

<sup>3</sup> <http://creativecommons.org/publicdomain/zero/1.0/>

<sup>4</sup> <http://www.dnb.de/EN/lds> and <http://www.zeitschriftendatenbank.de/de/services/datenlizenz/>

## 3. Linked Data Service of the DNB (DNB bibliographic data and GND authority data)

### 3.1. RDF/XML serialisation

For DNB bibliographic data and GND data, the RDF/XML serialisation was previously delivered via HTTP from the following URIs:

<http://d-nb.info/<IDN>/about/rdf>  
<http://d-nb.info/gnd/<NID>/about/rdf>

As of Release 02/2016 we are introducing URIs with the following schema for this serialisation as standard:

<http://d-nb.info/<IDN>/about/lds.rdf>  
<http://d-nb.info/gnd/<NID>/about/lds.rdf>

The old address will continue to reach the target, but there is a redirect with HTTP status code "301 Moved Permanently".

RDF/XML was previously delivered for the DNB bibliographic data and the GND data as the default serialisation for accessing the "<http://d-nb.info/.../about/lds>" URIs.

In the future, Terse RDF Triple Language (Turtle)<sup>5</sup> will be delivered instead.

The above URIs of form "<http://d-nb.info/.../about/lds.rdf>" will then be available for directly accessing RDF/XML in addition to the customary HTTP content negotiation (via the accept header with content-type "application/rdf+xml").

### 3.2. Turtle serialisation

Starting with release 02/2016 the Turtle format will also be offered via HTTP for the DNB bibliographic data and the GND data as a further serialisation form in addition to RDF/XML. Turtle serialisation of RDF data is delivered if "text/turtle" content-type is requested via HTTP content negotiation through the accept-header.

Turtle serialisation can also be obtained directly via the following URIs:

<http://d-nb.info/<IDN>/about/lds.ttl>  
<http://d-nb.info/gnd/<NID>/about/lds.ttl>

### 3.3. JSON-LD serialisation

Starting with release 02/2016 the JSON-LD<sup>6</sup> format will also be offered via HTTP for the DNB bibliographic data and the GND data as a further serialisation form in addition to RDF/XML.

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<sup>5</sup> <http://www.w3.org/TR/turtle/>

<sup>6</sup> <http://www.w3.org/TR/json-ld/>

JSON-LD serialisation of RDF data is delivered if "application/json" or "application/ld+json" content-type is requested via HTTP content negotiation through the accept-header. It can also be obtained directly via the following URIs:

```
http://d-nb.info/<IDN>/about/lds.jsonld
http://d-nb.info/gnd/<NID>/about/lds.jsonld
```

## 4. Linked Data Service of the German National Library (bibliographic data)

### 4.1. Journal title changes

As of Release 02/2016 there will be a fundamental change to journal titles in the DNB holdings. Previously the DNB Linked Data Service provided separate RDF descriptions in parallel to the Linked Data Service of the ZDB. In the future the RDF for journal titles in the DNB holdings will be delivered via the Linked Data Service of the ZDB. The RDF graph of each resource will now be expanded to include the following additional statements:

```
<http://d-nb.info/<IDN>>
  owl:sameAs <http://ld.zdb-services.de/resource/<ZDB-ID>> .
<http://ld.zdb-services.de/resource/<ZDB-ID>>
  owl:sameAs <http://d-nb.info/<IDN>> ;
[...].
```

This makes the relationship between the DNB and ZDB resources explicit. At a later date the affiliation of these titles to the Deutsche Nationalbibliografie will also be expressed. The purpose of this is to highlight the ZDB URIs identifying this resource type as the preferred method for addressing the resources.

The Linked Data Service of the ZDB uses the same data modelling as that of the DNB. Also included are "owl:sameAs" relations to the Linked Open Data Service of the Hochschulbibliothekszentrum des Landes Nordrhein-Westfalen (hbz) and the record IDN in the DNB system with the property "dc:identifier" and ISIL<sup>7</sup> "DE-101" prefix.

Example:

```
<http://ld.zdb-services.de/resource/536403-6>
  a bibo:Series ;
  dc:medium <http://rdvocab.info/termList/RDACarrierType/1044> ;
  owl:sameAs <http://hub.culturegraph.org/resource/DNB-012894796>,
    <http://lobid.org/resource/ZDB536403-6>, <http://d-nb.info/012894796> ;
  dc:identifier "(DE-101)012894796", "(DE-600)536403-6", "(OCoIc)713390934" ;
[...].
```

This change is reflected in all components of the DNB Linked Data Service, i.e. the bibliographic data dump, content negotiation via http (http://d-nb.info/<IDN> Accept: text/turtle) and direct retrieval of the URIs http://d-nb.info/<IDN>/about/lds etc.

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<sup>7</sup> <http://sigel.staatsbibliothek-berlin.de/en/startseite/>

Corresponding HTTP requests for the DNB journal resources will initially continue to be redirected to the DNB RDF serialisation with HTTP status code "303 See other" before being redirected from there with HTTP status code "301 Moved Permanently" to the RDF serialisation of the ZDB.

Example:

<http://d-nb.info/01000050X>

"Accept: application/rdf+xml"

HTTP/1.1 303 See Other

Location: <http://d-nb.info/01000050X/about/lds.rdf>

HTTP/1.1 301 Moved Permanently

Location: <http://ld.zdb-services.de/data/67-x.rdf>

Examples in the test file:

<http://d-nb.info/01000050X>, <http://d-nb.info/010128069>, <http://d-nb.info/010385053>, <http://d-nb.info/013462849>, <http://d-nb.info/013452010>

In the future we are planning to set up the "301 Moved Permanently" redirect from the DNB journal resource itself to the ZDB-resource (in the example <http://d-nb.info/01000050X> -> 301 -> <http://ld.zdb-services.de/resource/67-x>).

## 5. Linked Data Service of the DNB (GND data)

### 5.1. GND conversion changes

#### 5.1.1. Changes caused by the introduction of RDA

The descriptive cataloguing staff have been cataloguing the bibliographic data of the German National Library (DNB) using the "Resource Description and Access" (RDA)<sup>8</sup> standard since 1 October 2015. This also has implications for the GND.

- | Improvement: The description literals for name forms of persons, corporations, meetings, geographic entities and works have been brought in line with the RDA standard and the conventions used by the DNB. This synchronises the representation of the GND in RDF with that in the DNB portal. This affects all subproperties of "gndo:preferredName"<sup>9</sup>, "gndo:variantName"<sup>10</sup>, "gndo:affiliationAsLiteral"<sup>11</sup>, "gndo:placeOfBirthAsLiteral"<sup>12</sup> and "gndo:placeOfDeathAsLiteral"<sup>13</sup>.

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<sup>8</sup> <http://www.dnb.de/rda>

<sup>9</sup> <http://d-nb.info/standards/elementset/gnd#preferredName>

<sup>10</sup> <http://d-nb.info/standards/elementset/gnd#variantName>

<sup>11</sup> <http://d-nb.info/standards/elementset/gnd#affiliationAsLiteral>

<sup>12</sup> <http://d-nb.info/standards/elementset/gnd#placeOfBirthAsLiteral>

<sup>13</sup> <http://d-nb.info/standards/elementset/gnd#placeOfDeathAsLiteral>

Example:

Previously:

```
<http://d-nb.info/gnd/66404-2>
  a <http://d-nb.info/standards/elementset/gnd#OrganOfCorporateBody> ;
  gndo:preferredNameForTheCorporateBody "Seine / Commission Supérieure de l'Assainissement
  de Paris / Sous-Commission <4> / Sous-Commission Spéciale <1>"^^xsd:string ;
  gndo:variantNameForTheCorporateBody "Sous-Commission <Sous-Commission Spéciale 1, 4
  Commission Supérieure de l'Assainissement de Paris, Seine>"^^xsd:string .
```

New:

```
<http://d-nb.info/gnd/66404-2>
  a <http://d-nb.info/standards/elementset/gnd#OrganOfCorporateBody> ;
  gndo:preferredNameForTheCorporateBody "Seine. Commission Supérieure de l'Assainissement de
  Paris. Sous-Commission (4). Sous-Commission Spéciale (1)"^^xsd:string .
  gndo:variantNameForTheCorporateBody "Sous-Commission (Sous-Commission Spéciale 1, 4
  Commission Supérieure de l'Assainissement de Paris, Seine)"^^xsd:string .
```

Examples in the test file:

```
http://d-nb.info/gnd/10003148X, http://d-nb.info/gnd/66404-2, http://d-nb.info/gnd/140708812
http://d-nb.info/gnd/119046539, http://d-nb.info/gnd/667246-2, http://d-nb.info/gnd/4000805-8
http://d-nb.info/gnd/121433692, http://d-nb.info/gnd/300938322
```

## 5.1.2. Representation of DDC notations

- | Improvement: In the future, auxiliary table notations of the Dewey Decimal Classification<sup>14</sup> will also be issued in "gndo:relatedDdcWithDegreeOfDeterminacy1", "gndo:relatedDdcWithDegreeOfDeterminacy2", "gndo:relatedDdcWithDegreeOfDeterminacy3" and "gndo:relatedDdcWithDegreeOfDeterminacy4".

Example:

"T3C—351" as URI "http://dewey.info/class/3C--351/"

Examples in test file:

```
http://d-nb.info/gnd/4001862-3, http://d-nb.info/gnd/4259559-9,
http://d-nb.info/gnd/4266945-5, http://d-nb.info/gnd/4419094-3
```

- | Improvement: In the future, the edition information (previously: "/e22/") will be dispensed within the "dewey.info" URI of the properties mentioned above because the DDC notations in the GND always refer to the most recent version of the DDC. i.e. "http://dewey.info/class/305.565/e22/" becomes "http://dewey.info/class/305.565/"

Examples in the test file:

```
http://d-nb.info/gnd/4000002-3, http://d-nb.info/gnd/2033898-3, http://d-nb.info/gnd/4001281 -
5
```

---

<sup>14</sup> [http://www.dnb.de/Subsites/ddcdeutsch/DE/Home/home\\_node.html](http://www.dnb.de/Subsites/ddcdeutsch/DE/Home/home_node.html)

Even though the dewey.info service is currently not available, we continue to use the URIs of dewey.info as the canonical identifiers for DDC classes. This is in line with the recommendation of the EDUG (European Dewey User Group)<sup>15</sup>.

### 5.1.3. Linked resources

From Release 02/2016 we will no longer be delivering statements about linked resources. This was previously effective via HTTP, but not in the dumps.

An example (shortened):

The following is currently delivered from <http://d-nb.info/gnd/100006000/about/rdf>:

```
<http://d-nb.info/gnd/100006000>
  a <http://d-nb.info/standards/elementset/gnd#RoyalOrMemberOfARoyalHouse> ;
  gndo:preferredNameForThePerson "Johann <II., Pfalz-Zweibrücken, Pfalzgraf>" ;
  gndo:familialRelationship <http://d-nb.info/gnd/120091879> ;
  agndo:professionOrOccupation <http://d-nb.info/gnd/4173982-6> .

<http://d-nb.info/gnd/120091879> gndo:preferredNameForThePerson
  "Luise <Pfalz-Zweibrücken, Pfalzgräfin>" .
<http://d-nb.info/gnd/4173982-6> gndo:preferredNameForTheSubjectHeading "Pfalzgraf" .
```

The last two statements will be discontinued as of Release 02.2016 (corresponds to the implementation of the current dump).

Examples in the test file:

<http://d-nb.info/gnd/100006000>, <http://d-nb.info/gnd/131886436>, <http://d-nb.info/gnd/131914448>, <http://d-nb.info/gnd/131886290>, <http://d-nb.info/gnd/132166569>

### 5.1.4. Redirects

From October 2015 to 12 January 2016, a faulty delivery of redirected GND sets caused disruptions to the provision of RDF data via OAI-PMH. Following resolution of this issue, meaningful statements about the redirected records are now delivered via OAI-PMH (concerns ListRecords).

An example (in the XML of the interface):

<https://services.dnb.de/oai/repository?verb=ListRecords&set=authorities&metadataPrefix=RDFxml&from=2015-12-02T00:02:13Z&until=2015-12-02T00:02:15Z>

```
<ListRecords xsi:schemaLocation="http://www.w3.org/1999/02/22-rdf-syntax-ns
http://www.w3.org/2000/07/rdf.xsd">
  <record>
    <header>
      <identifier>oai:dnb.de/authorities/107919357X</identifier>
      <datestamp>2015-12-02T00:02:15Z</datestamp>
      <setSpec>authorities</setSpec>
    </header>
    <metadata>
```

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<sup>15</sup> <http://edug.pansoft.de/>

```

<rdf:RDF xmlns:gndo="http://d-nb.info/standards/elementset/gnd#"
  xmlns:dnbt="http://d-nb.info/standards/elementset/dnb/" [...]>
  <rdf:Description rdf:about="http://d-nb.info/gnd/107919357X">
    <owl:sameAs rdf:datatype="http://www.w3.org/2001/XMLSchema#string">
      http://d-nb.info/gnd/129551767</owl:sameAs>
    <dnbt:canonicalUri rdf:datatype="http://www.w3.org/2001/XMLSchema#string">
      http://d-nb.info/gnd/129551767</dnbt:canonicalUri>
    </rdf:Description>
  </rdf:RDF>
</metadata>
</record>
[...]
</ListRecords>

```

When specifically accessing a redirected record via SRU (only the IDN and NID indices), both the RDF descriptions of the redirected record (cf. OAI example above) as well as the target record are delivered.

The following example is given for comparison:

<https://services.dnb.de/sru/authorities?version=1.1&operation=searchRetrieve&query=NID%3D107919357X&recordSchema=RDFxml>

From Release 02/2016, the "owl:sameAs relation"<sup>16</sup> between both GND entities will be included in the target records of redirects. The new datatype property "dnbt:deprecatedUri"<sup>17</sup> will be used to state the URI of the redirected GND entity as the no-longer-preferred reference of the entity. This statement is in addition to the "gndo:oldAuthorityNumber"<sup>18</sup> already used.

For example:

```

< http://d-nb.info/01000050X >
  a <http://d-nb.info/standards/elementset/gnd#DifferentiatedPerson> ;
  gndo:preferredNameForThePerson "Schmidt, Johann Lorenz"^^xsd:string ;
  gndo:oldAuthorityNumber "(DE-588)122535669"^^xsd:string, [...] ;
  dnbt:deprecatedUri "http://d-nb.info/gnd/122535669"^^xsd:string ;
  owl:sameAs http://d-nb.info/gnd/122535669 ;
  [...] .

```

Examples in test file:

<http://d-nb.info/gnd/140547355>, <http://d-nb.info/gnd/1077756755>, <http://d-nb.info/gnd/7781009-0>, <http://d-nb.info/gnd/4439683-1>, <http://d-nb.info/gnd/1069819204>, <http://d-nb.info/gnd/1068824549>

In RDF HTTP deliveries regarding redirected records, the RDF description of the GND target entity is sent directly. In one of the future releases this will be adapted and first redirected with HTTP status code "301 Moved Permanently" from the redirected to the GND target entity. The HTTP link header<sup>19</sup> rel= "canonical" will also be given.

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<sup>16</sup> <http://www.w3.org/2002/07/owl#sameAs>

<sup>17</sup> <http://d-nb.info/standards/elementset/dnb#deprecatedUri>

<sup>18</sup> <http://d-nb.info/standards/elementset/gnd#oldAuthorityNumber>

<sup>19</sup> <https://tools.ietf.org/html/rfc5988>

## 6. Linked Data Service of the bibliographic data of the DNB and the Linked Data Service ZDB

### 6.1. Modelling changes arising from the introduction of RDA

The descriptive cataloguing staff have been cataloguing the bibliographic data of the German National Library (DNB) using the "Resource Description and Access" (RDA)<sup>20</sup> standard since 1 October 2015. This change permits additions to the Linked Data Service which will be implemented in two stages. This release represents the first part. The modifications and modelling of the new elements are agreed for the German-speaking countries by the DINI-AG KIM Bibliographic Data Group<sup>21</sup>.

#### 6.1.1. Content type

The new element "content type" is transported by the property "rdau:P60049"<sup>22</sup> (has content type). The objects are URIs of the elements from the RDA Content Type Value Vocabulary<sup>23</sup>. In addition, more specific content information can be given in further statements by "rdau:P60049" which refer to GND topical terms. This will occur mainly in ZDB resources.

Examples:

```
<http://d-nb.info/1078512442>  
rdau:P60049 <http://rdaregistry.info/termList/RDAContentType/1020> .
```

```
<http://ld.zdb-services.de/resource/2844560-0>  
rdau:P60049 <http://rdaregistry.info/termList/RDAContentType/1020> , <http://d-  
nb.info/gnd/4067488-5> , <http://d-nb.info/gnd/4114240-8> .
```

Examples in test file:

```
http://d-nb.info/1078512442, http://d-nb.info/976056879, http://ld.zdb-  
services.de/resource/2845596-4,  
http://ld.zdb-services.de/resource/2844560-0
```

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<sup>20</sup> <http://www.dnb.de/rda>

<sup>21</sup> <https://wiki.dnb.de/x/8YBjAw>

<sup>22</sup> <http://rdaregistry.info/Elements/u/P60049>

<sup>23</sup> <http://rdaregistry.info/termList/RDAContentType>



## 6.1.2. Media type

The new "media type" element is transported by the property "rdau:P60050"<sup>24</sup> (has media type). The objects are URIs of the elements from the RDA Media Type Value Vocabulary<sup>25</sup>.

Example:

```
<http://d-nb.info/1076025137>  
rdau:P60050 <http://rdaregistry.info/termList/RDAMediaType/1005> .
```

Examples in test file:

```
http://d-nb.info/1076025137, http://d-nb.info/1077198841, http://ld.zdb-  
services.de/resource/2840793-3
```

## 6.1.3. Data carrier type

The new element "data carrier type" is transported by the property "rdau:P60048"<sup>26</sup> (has carrier type). The objects are URIs of the elements from the RDA Carrier Type Value Vocabulary<sup>27</sup>.

In addition, more specific data carrier information can be given in further statements by "rdau:P60048" which refer to GND topical terms. This will occur mainly in ZDB resources.

Examples:

```
<http://d-nb.info/1081725117>  
rdau:P60048 <http://rdaregistry.info/termList/RDACarrierType/1048> .
```

```
<http://ld.zdb-services.de/resource/2840450-6>  
rdau:P60048 <http://rdaregistry.info/termList/RDACarrierType/1004> , <http://d-  
nb.info/gnd/4522869-3> .
```

Examples in test file:

```
http://d-nb.info/1081725117, http://d-nb.info/1081828536, http://ld.zdb-  
services.de/resource/2840786-6,  
http://ld.zdb-services.de/resource/2840450-6, http://ld.zdb-services.de/resource/2840079-3
```

Note:

The new information on the content and data carrier type overlaps partially with the information that was hitherto, and will initially continue to be, issued in the "rdf:type" and "dcterms:medium" properties. Since the new elements will eventually also be made available for legacy data, i.e. universally, they will replace the "rdf:type" and "dcterms:medium" statements in the medium term. Until then, these statements will remain as constants for all delivered data of all generations of rules.

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<sup>24</sup> <http://rdaregistry.info/Elements/u/P60050>

<sup>25</sup> <http://rdaregistry.info/termList/RDAMediaType>

<sup>26</sup> <http://rdaregistry.info/Elements/u/P60048>

<sup>27</sup> <http://rdaregistry.info/termList/RDACarrierType>

## 6.1.4. Date of original for reproductions

In cases where the date of the original is also recorded in the description of the reproduction in RDA-catalogued data, this will also be delivered from release 02/2016 by the property "rdau:P60527"<sup>28</sup> (has date of resource). The date of the relevant reproduction will be expressed as usual with "dcterms:issued". The year given in "rdau:P60527" should be a four-digit number and is issued as literals of type "xsd:string"<sup>29</sup>.

Outlook: In the future, as soon as a technical means is set up for ensuring that years are always given in four figures, we will specify the format "xsd:gYear"<sup>30</sup>.

Example in test file: <http://d-nb.info/1059939010>

## 6.1.5. Copyright date, date of distribution, date of manufacture

These new details are issued in RDF by the properties "dcterms:dateCopyrighted"<sup>31</sup>, "rdau:P60070"<sup>32</sup> (has date of distribution) and "rdau:P60072"<sup>33</sup> (has date of manufacture). The objects are literals of form YYYY or YYYY-YYYY, which will initially be defined as "xsd:string" and then be specified in more detail at a later date (cf. date of the original for reproductions).

Example in test file: <http://d-nb.info/1080260811>

## 6.1.6. Target audience

If a GND-linked target audience is given, this will be issued in the future by the property "dcterms:audience"<sup>34</sup>.

Example:

```
<http://d-nb.info/1257293036>  
dcterms:audience <http://d-nb.info/gnd/4030550-8> .
```

Examples in test file:

```
http://d-nb.info/1257293036, http://d-nb.info/1082400718, http://d-nb.info/1257293052,  
http://ld.zdb-services.de/resource/2842888-2
```

---

<sup>28</sup> <http://rdaregistry.info/Elements/u/P60527>

<sup>29</sup> <http://www.w3.org/2001/XMLSchema#string>

<sup>30</sup> <http://www.w3.org/2001/XMLSchema#gYear>

<sup>31</sup> <http://purl.org/dc/terms/dateCopyrighted>

<sup>32</sup> <http://rdaregistry.info/Elements/u/P60070>

<sup>33</sup> <http://rdaregistry.info/Elements/u/P60072>

<sup>34</sup> <http://purl.org/dc/terms/audience>

## 7. Sample files and other information

The following sample files, including the announced changes, can be retrieved in the serialisation forms RDF/XML, Turtle and JSON-LD from <http://datendienst.dnb.de/cgi-bin/mabit.pl?userID=testdat&pass=testdat&cmd=login>

- | "ZDBTitelTestRelease02\_2016..." for ZDB bibliographic data
- | "DNBTitelTestRelease02\_2016..." for DNB bibliographic data
- | "GNDTitelTestRelease02\_2016..." for GND authority data

Information on the Linked Data Service of the German National Library can be found on our website at <http://www.dnb.de/lds>.

Please do not hesitate to contact us should you have any questions.

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