Metadata Collection Records for Language Resources

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Abstract

In this paper we motivate the need for introducing more elaborate and consistent metadata records for collections (of linguistic) data resources in the CLARIN context. For this purpose we designed and implemented a CMDI profile. We validated the profile in a first pilot in which we populated the profile for 45 Dutch language resources. Given the complexity of the profile and special purpose requirements we developed our own interface for creating, editing, listing, copying and exporting descriptions of metadata collection records. The requirements for this interface and its implementation are described.

Keywords: LR infrastructure; metadata; collection records; Collection Bank

1. Introduction

In the context of CLARIN (Common Language Resources Infrastructure) various stakeholders have been working towards the realisation of an integrated, interoperable research infrastructure. Apart from the technological achievements and the services offered, key factors to the success of this infrastructure are the availability and accessibility of the language resources. Ideally the infrastructure is populated with as many resources as possible. Therefore continued efforts are being put into gathering what resources there are and curating them. Targeting also the many resources that have been created in the context of research projects but have not (yet) found their way to one of the data centres or repositories.

In order to provide an entry-point to the language resources available in the CLARIN infrastructure, the Virtual Language Observatory (VLO) was developed (Van Uytvank 2014; Van Uytvank et al. 2010). The VLO offers a faceted browser which allows users to search for resources through their metadata. User experiences with the VLO have shown that discovering resources, and especially resources of which one is not aware they exist, is problematic. From the analysis of Odijk (2014) we know that while some of the problems arise from the current limitations of the VLO, in many cases the cause of the problem lies in the nature of the metadata. The set of facets used for search in the VLO is (too) small, not all facets are relevant for the discovery of resources, and some facets are lacking and should be added. In 2015 the CLARIAH Metadata Curation Taskforce was charged with the task to come up with a profile for collection records that would support the search for and discovery of language (data) resources. Collections in this context are to be understood as creator or depositor defined aggregations of data that fulfill a certain purpose. They have been created explicitly so as to form a browsable and therefore manageable hierarchy (cf. Broeder et al. 2009: 51). An example of a collection is the Spoken Dutch Corpus (Oostdijk, 2000). It comprises some 800 hours of sound recordings along with various types of transcriptions and annotations, a lexicon and a number of frequency lists.

In the present paper we describe how we proceeded and arrived at a profile for collection records which we think overcomes most of the shortcomings that various profiles that have previously been used exhibited. Here we restrict ourselves to the metadata of (linguistic) data collections, thus excluding software and tools.

The structure of the remainder of this paper is as follows: In Section 2 we present the profile we developed for collection records. We motivate its design and the considerations underlying it. Then, in Section 3 we report on the pilot that we conducted. In this pilot we applied the profile to a select but varied set of resources. Next, we introduce the Collection Bank, an interface that we developed for entering and maintaining metadata collection records. This paper concludes with a summary of the main outcomes, and suggestions for future work.

2. Profile for Collection Records

The development of the profile was guided by a number of desiderata that we derived from Odijk (2014). Odijk found that

(a) often metadata elements that were crucial for the discovery of a resource were lacking as they were not mandatory
(b) values for several important metadata elements are not restricted to a closed set
(c) the metadata created by various researchers and research groups often display what he calls ‘unnecessary differences’
(d) the granularity of the metadata records varies wildly and is often too small.

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1 https://www.clarin.eu/
2 In the Netherlands the Data Curation Service was set up as a centre of expertise to assist researchers in preparing their data for delivery to one of the CLARIN centres (van den Heuvel et al. 2015). 
3 Lušicky and Wissik (2017) also note the need for additional metadata. While using the VLO for discovering resources in the field of translation studies and urge other user groups to assess the VLO from their perspective and specify what should be added to satisfy their needs.
4 In the Dutch CLARIAH project (https://www.clariah.nl/en/), the Metadata Curation Taskforce is concerned with providing metadata for various resources.
From this we concluded that we needed to establish what metadata elements are essential for search and discovery of resources, that such elements should be mandatory and to the extent possible, should have values from a closed/controlled vocabulary.

We started out by making an inventory of CLARIN-NL and CLARIN-EU collections represented in the CLAPOP5, VLO6, and EASY2, and the information that was available in the form of collection records as well as any other information that might be considered relevant. It appeared that the information varied widely as can be seen from the comparison between CLAPOP, VLO and EASY in Table 1.

| CLAPOP | VLO | EASY |
|--------|-----|------|
| Title* | +   | +    | +    |
| Research domain* | +   |       | +    |
| Annotations | +   |       |       |
| Format | +   | +    |       |
| Resource tags | +   |       |       |
| Language | +   | +    |       |
| Clarin centre10 | +   | +    |       |
| Country | +   | +    |       |
| Resource type | +   |       |       |
| Availability | +   |       |       |
| National project | +   |       |       |
| Modality | +   |       |       |
| Organization | +   |       |       |
| Keyword | +   |       |       |
| Creator |       | +   |       |
| Description |       | +   |       |
| Subject |       | +   |       |
| Coverage |       | +   |       |
| Identifier |       | +   |       |

Table 1: Metadata available for resource discovery

We also looked at what profiles occurred in the CLARIN Component Registry. Here again there was a great deal of variation as most profiles appear to be collection-specific by design.

In developing our profile for collection records we opted to use the Dublin Core Metadata Element Set as a kernel similarly to what Bird and Simons (2003) did for OLAC. This decision was motivated by the fact that Dublin Core (DC)11 is well-established: over the years it has been widely adopted and has proven to be usable for describing a wide range of resources. More specifically, it provides explicit definitions for each of the elements it contains. This, we expect, will contribute to the standardization we aim for. An illustration of where we deviate from DC is the distinction we make between the type and subtype of a resource. Thus in line with DC, the element type is defined as the nature of a resource, and follows the attributes defined in DC.12 The attribute values associated with it, viz. ‘collection’, ‘dataset’, ‘image’, ‘sound’ and ‘text’ form a closed set. However, where in DC for example ‘dataset’ refers to any data encoded in a defined structure, our subtype for ‘dataset’ opens up a new closed set of attributes which distinguishes between ‘list’, ‘table’, ‘lexicon’ and ‘treebank’.

Since we were working in the CLARIN context, we found it opportune to select and copy the building blocks for our metadata collection profile from CLARIN’s component metadata.13 Important profiles from which blocks were copied (and pruned and modified where needed) were: OralHistoryInterviews, SpeechCorpus, and textCorpusProfile.

From the start we were aware that the collection records were to be included in an interface where they could be searched. In determining the relevance of various metadata elements we made a clear distinction between those metadata elements that are relevant as search or filter criteria and those that are only informative. The elements we deemed most relevant for search and filtering purposes are: title, type, modality, annotation type, temporal and geographical provenance, and language.

Some of the metadata have a range of fixed values (closed sets). The permitted values are given in CLARIN’s Concept Registry14 but, in CLARIN context, these are not (or rather: no longer) considered restrictive. Consequently, we added extra values for some of the metadata elements. This we did, for example, for language (where we needed a distinction for Northern and Southern Dutch (=Flemish)), and also for annotation format, annotation type, and genre.

Whenever available, the metadata elements in the profile have links to CLARIN’s Concept Registry.

Relations between collections are formulated via a specific provision since the relation category is not well supported in the Concept Registry and would lead to somewhat forced CMDI constructs. Moreover, many of the attributes available for existing types of relationship in DC and DataCite16 do not cover the relations that we would like to describe such as isSiblingOf, inRepository, hasSubset. These are quite typical relations between resources, but these attributes are not available in DataCite and DC. These relations have therefore been provided in a separate text file where they are formulated as RDF tuples. This file is referred to in the CMDI metadata file.

The relations are embedded in the resource proxy list of the CMDI file and are illustrated in Figure 1 for one of the collections (the CGN 1.0). Furthermore we added metadata elements for other resource proxies such as search pages (URLs providing a search interface for a resource) and landing pages (URLs providing basic information about a resource). These are also shown in Figure 1.

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5 http://dev.clarin.nl/clarin-data-list-fs
6 https://vlo.clarin.eu/
7 https://easy.dans.knaw.nl/ui/?wicket:interface=3:::
8 In CLAPOP it is not possible to filter on title. VLO here uses ‘collection’.
9 In EASY ‘audience’ is used.
10 In VLO ‘data provider’ is used.
11 http://dublincore.org/
12 http://dublincore.org/documents/dces/
13 With ‘list’ also the type of list (frequency or other) and type of list items (word type, lemma, POS tag, n-gram, phrase type, sentence type, other) are associated as attributes.
14 See https://www.clarin.eu/content/component-metadata and https://catalog.clarin.eu/ds/ComponentRegistry
15 https://www.clarin.eu/ccr
16 https://www.datacite.org/
user friendly way whilst providing a CMDI file export option as well.

4. An Interface for Entering Metadata Collection Records

CLARIN offers a versatile and well documented metadata editor for CMDI profiles: COMEDI\(^\text{20}\) (Lyse et al., 2014). This tool takes a CMDI profile file as input and allows entering values for each metadata record contained in it. However, the tool is very general in its set-up, whereas what we needed was a more specific metadata editor for our collection records, allowing us to include

- clarifications per metadata category
- not yet existing components and metadata values
- a deeper hierarchical design of our components
- our own PIDs.

Moreover, edited metadata records should not be visible to everyone before being released. Based on these considerations we decided to develop an interface that would meet our requirements: the ‘Collection Bank’.

4.1 The Collection Bank

The Collection Bank is a web application built on the Django framework.\(^\text{21}\) The application facilitates creating, editing, listing, copying and exporting descriptions of metadata collection records.

The database model, which is hidden from the user, follows the ‘CorpusCollection’ specification of the model that is publically available in the CMDI Component Registry.\(^\text{22,23}\) Saved collections can be ‘published’, which means that their xml representations become available through a persistent identifier. Saved collections become part of the user’s list of collections (Collections > View).

Changes in the definition of CorpusCollection in the CMDI Component Registry necessitate adapting the web interface. Changes in the fixed sets of metadata choices, for instance (e.g. availability can have the values ‘academic’, ‘public’, ‘restricted’ and ‘other’), require the web interface’s administrator to change the corresponding Field choices, as illustrated in Figure 2.

\(^{17}\) http://portal.clarin.nl/clarin-data-list-fs
\(^{18}\) https://vlo.clarin.eu/
\(^{19}\) https://lindat.mff.cuni.cz/repository/xmlui/discover

\(^{20}\) http://clarino.uib.no/comedi/
\(^{21}\) See http://applejack.science.ru.nl/collbank. An account can be created through Extra > SignUp. The program heavily uses the existing facilities within Python’s Django package.

\(^{22}\) https://catalog.clarin.eu/ds/ComponentRegistry/

\(^{23}\) CorpusCollection: clarin.eu:cr1:p_1493735943947
The menu option ‘list-view’ of the collections (illustrated in Figure 3) provides an overview of all collections that have been entered. Each collection comes with its publication status and date (if published) and offers the user a number of action buttons: view, edit, download, copy and publish. The view button opens a human readable view of the collection, the edit button opens the editor (see below). The download button allows exporting a collection as a CMDI xml file (the Tools > Export commands facilitate exporting all the user’s records together). The copy action allows copying whole metadata collection records (easing the work on similar collections). The last button publish creates the CMDI xml file, adding a persistent handle to it. All collections can be viewed and downloaded outside of the CollBank application through their persistent handle.

Validation of the record’s contents is done after creation of its CMDI xml representation; it is part of both the download as well as the publish actions. Validation is done through the xsd definition of a collection record, which is made available in the CLARIN components registry.

Upon creation of a record (Collections > Add), the collection editor opens up, and the user can specify the obligatory and optional parts of the metadata collection. The last button publish creates the CMDI xml file, adding a persistent handle to it. All collections can be viewed and downloaded outside of the CollBank application through their persistent handle.

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Error handling, e.g. where obligatory fields are not filled in, follows the standards set by the Django framework.

The VU-DNC collection contains two ‘resources’, which become visible on the same page by clicking the ‘Show’ buttons. The principle behind the Collbank web application is that the fields of one collection are all accessible on one web page. Figure 4 does not show the other editable collection fields, but it does contain the form’s bottom row that holds the different save and delete options available to the collection entry as a whole.

5. Conclusion and Future Work

In this contribution we have provided the motivation for introducing more elaborate and consistent metadata records for collections of (linguistic) data resources. We have presented the CMDI profile which we developed for this purpose and presented the selection of collections used for populating the profile. Given the complexity of the profile and special purpose requirements we developed our own interface for creating, editing, listing, copying and exporting descriptions of metadata collection records.

As a follow-up of the work presented here, the metadata collection records will be made available and searchable in CLARIN’s CLAPOP portal and in the VLO. The Collection Bank interface will be used to add further metadata collection records in the near future.

24 Browsing to a persistent handle results in a text-oriented summary of the collection metadata, while the xml version of the record is returned in other situations. The specification of the VU-DNC collection, as an example, is available at http://cls.ru.nl/registry/cbmetadata_00016, or with its PID, at http://hdl.handle.net/21.11114/COLL-0000-000B-CAD5-1.

25 Error handling, e.g. where obligatory fields are not filled in, follows the standards set by the Django framework.
6. Acknowledgements

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Van Uytvanck, D., Zinn, C., Broeder, D., Wittenburg, P., and Gardellini, M. (2010). Virtual Language Observatory: The portal to the language resources and technology universe. In Proceedings of the seventh International Conference on Language Resources and Evaluation (LREC2010), pp. 900-903. http://www.lrec-conf.org/proceedings/lrec2010/

Vis, K. (2011). Subjectivity in News Discourse. A corpus linguistic analysis of informalization. PhD thesis, VU Amsterdam. https://research.vu.nl/ws/portalfiles/portal/2925809

8. References to Language Resource Portals

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[Collection Bank] http://applejack.science.ru.nl/collbank
[LRT inventory] http://www.clarin.eu/view_resources and http://www.clarin.eu/view_tools
[VU-DNC] https://portal.clarin.inl.nl/vu-dnc/

26 https://www.clarinah.nl/en/
**APPENDIX: Collections included in the pilot set**

| Name collection                  | Relevant information available from                                                                                                                                                                                                 |
|----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Corpus Gesproken Nederlands (CGN) | http://lands.let.ru.nl/cgn/  
http://corpus1.mpi.nl/ds/asv/?0&openpath=node:2102153  
http://tst-centrale.org/nl/tst-materialen/corpora/corpus-gesproken-nederlands-detail |
| SoNaR                            | https://dev.clarin.nl/node/4195  
http://link.springer.com/book/10.1007%2F978-3-642-30910-6  
http://tst-centrale.org/nl/tst-materialen/corpora/sonar-corpus-detail |
| D-LUCEA                          | https://portal.clarin.nl/node/4183  
https://corpus1.mpi.nl/ds/asv/?0&openpath=node:2102153#  
http://lucea.wp.hum.uu.nl/summary/  
http://dev.clarin.nl/clarin-data-list-fs |
| LESLLA                           | https://corpus1.mpi.nl/ds/asv/?0&openpath=node:2102153#  
http://dev.clarin.nl/clarin-data-list-fs |
| Dictionary of the Brabantic Dialects, Dictionary of the Limburgian Dialects, Dictionaries of the dialects of Gelderland | http://www.lrec-conf.org/proceedings/lrec2016/pdf/223_Paper.pdf  
http://dialect.ruhosting.nl/wbd/index.htm  
http://dialect.ruhosting.nl/wld/index.htm  
http://dialect.ruhosting.nl/wgd/index.htm |
| MIMORE Data: DiDDD MIMORE Data: DynaSAND MIMORE Data: GTRP | http://portal.clarin.nl/node/4213  
http://validdata.org/ especially: http://validdata.org/clarin-project/datasets/  
https://corpus1.mpi.nl/ds/asv/?0&openpath=node:2102153  
Papers: DOI:10.1075/dujal.3.2.02heu  
http://www.lrec-conf.org/proceedings/lrec2014/index.html at Authors van den Heuvel |
| VALID                            | http://validdata.org/ especially: http://validdata.org/clarin-project/datasets/  
https://corpus1.mpi.nl/ds/asv/?0&openpath=node:2102153  
Papers: DOI:10.1075/dujal.3.2.02heu  
http://www.lrec-conf.org/proceedings/lrec2014/index.html at Authors van den Heuvel |
| VU-DNC                           | http://portal.clarin.nl/node/4194  
https://portal.clarin.inl.nl/vu-dnc/ |
| Academia Collectie (NIBG)        | http://portal.clarin.nl/node/4230  
https://www.academia.nl/  
https://www.academia.nl/faq/28341  
https://vlo.clarin.eu/search?0&fq=collection:Nederlands+Instituut+voor+Beeld+en+Geluid+Aademic+collectie |
| DBD/TCULT                        | http://www.clarin.eu/sites/default/files/IDCC13-DCS_v4.2-final.pdf  
https://corpus1.mpi.nl/ds/asv/?openpath=node:84720  
https://www.clarin.eu/sites/default/files/cac2014_submission_15_0.pdf |
| DiscAn                           | https://dev.clarin.nl/node/4198  
https://dx.doi.org/10.1016/j.dcm.2012.09.003  
https://corpus1.mpi.nl/ds/asv/;jsessionid=9C64195BC53CEFED79D1B544E8822C23%0 |
| DUELME Data                      | http://portal.clarin.nl/node/4200  
http://duelmeclarin.nl/  
http://duelmeclarin.nl/documentation.php  
https://vlo.clarin.eu/record?2&docId=hdl_58_10032_47_270633b99d34b5c06b0699e8e2dd93c  
&q=collection:TST-Centrale&index=1&count=2  
Go to Advanced: Show all metadata fields |
| INTERVIEWS Data                  | https://easy.dans.knaw.nl/ui/datasets/id/easy-dataset:41923  
https://dev.clarin.nl/node/4201 |
| IPNV                             | https://easy.dans.knaw.nl/ui/datasets/id/easy-dataset:46232  
https://www.clarin.eu/sites/default/files/cac2014_submission_15_0.pdf |
| Data Base                                    | URL                                                                                           |
|----------------------------------------------|-----------------------------------------------------------------------------------------------|
| Laiseang                                     | [https://dev.clarin.nl/node/4197](https://dev.clarin.nl/node/4197)                            |
|                                              | [https://corpus1.mpi.nl/ds/asv/?sessionid=9C64195BC53CEFE9D79D1B544E8822C230](https://corpus1.mpi.nl/ds/asv/?sessionid=9C64195BC53CEFE9D79D1B544E8822C230) |
| Nehol                                        | [https://dev.clarin.nl/node/4193](https://dev.clarin.nl/node/4193)                            |
|                                              | [https://corpus1.mpi.nl/ds/asv/?sessionid=9C64195BC53CEFE9D79D1B544E8822C230](https://corpus1.mpi.nl/ds/asv/?sessionid=9C64195BC53CEFE9D79D1B544E8822C230) |
| Etc Database                                 | [https://portal.clarin.nl/node/4180](https://portal.clarin.nl/node/4180)                      |
|                                              | [https://shebang.ancient-data.org/sources](https://shebang.ancient-data.org/sources)         |
|                                              | [https://easy.dans.knaw.nl/ui/datasets/id/easy-dataset:48490/tab/1](https://easy.dans.knaw.nl/ui/datasets/id/easy-dataset:48490/tab/1) |
|                                              | [https://easy.dans.knaw.nl/ui/datasets/id/easy-dataset:58245/tab/1](https://easy.dans.knaw.nl/ui/datasets/id/easy-dataset:58245/tab/1) |
| Liederbank                                   | [http://www.liederenbank.nl/index.php?lan=en](http://www.liederenbank.nl/index.php?lan=en)   |
|                                              | [https://nl.wikipedia.org/wiki/Nederlandse_Liederenbank](https://nl.wikipedia.org/wiki/Nederlandse_Liederenbank) |
| IFA Corpus = IFA speech corpus = IFA Spoken Language Corpus | [https://vlo.clarin.eu/record?sessionid=2f26ac7e25fc5d9da76ef19b781a5371&docId=hdl_58_1839_47_00-0000-0000-0000-0000-46DA-E&q=IFA+corpus&fq=languageCode:code:nld&index=0&count=5](https://vlo.clarin.eu/record?sessionid=2f26ac7e25fc5d9da76ef19b781a5371&docId=hdl_58_1839_47_00-0000-0000-0000-0000-46DA-E&q=IFA+corpus&fq=languageCode:code:nld&index=0&count=5) |
|                                              | [http://www.fon.hum.uva.nl/IFA-SpokenLanguageCorpora/IFAcorsus/](http://www.fon.hum.uva.nl/IFA-SpokenLanguageCorpora/IFAcorsus/) |
| IFA Dialogue Video Corpus                    | [https://vlo.clarin.eu/record?1&docId=http_58__47__hdl.handle.net_47_11372_47_LRT_576_64_format_61_cmdid&g=ifadvcorpus&index=0&count=2](https://vlo.clarin.eu/record?1&docId=http_58__47__hdl.handle.net_47_11372_47_LRT_576_64_format_61_cmdid&g=ifadvcorpus&index=0&count=2) |
|                                              | [http://www.fon.hum.uva.nl/IFA-SpokenLanguageCorpora/IFADVcorpus/](http://www.fon.hum.uva.nl/IFA-SpokenLanguageCorpora/IFADVcorpus/) |
| Corpus NGT (Nederlandse GebarenTaal)         | [http://www.ru.nl/corpusntuk/](http://www.ru.nl/corpusntuk/)                                 |
|                                              | [http://www.ru.nl/corpusntg/de_filmpjes/download-filmpje/](http://www.ru.nl/corpusntg/de_filmpjes/download-filmpje/) (licenses) |
|                                              | [https://corpus1.mpi.nl/ds/asv/?4&openpath=node:319374](https://corpus1.mpi.nl/ds/asv/?4&openpath=node:319374) |
| CHILDES Dutch corpora                        | [http://childes.psy.cmu.edu/](http://childes.psy.cmu.edu/)                                  |
|                                              | [https://vlo.clarin.eu/record?2&docId=http_58__47__hdl.handle.net_47_11372_47_LRT_439_64_format_61_cmdid&g=childes&fq=languageCode:code:nld&index=0&count=3692](https://vlo.clarin.eu/record?2&docId=http_58__47__hdl.handle.net_47_11372_47_LRT_439_64_format_61_cmdid&g=childes&fq=languageCode:code:nld&index=0&count=3692) |
|                                              | [http://childes.talkbank.org/access/Dutch/](http://childes.talkbank.org/access/Dutch/)       |
| ESF Corpus                                   | [https://user.clarin.eu/resources mpi-esf-corpus](https://user.clarin.eu/resources mpi-esf-corpus) |
|                                              | [https://corpus1.mpi.nl/ds/asv/?4&openpath=node:319374](https://corpus1.mpi.nl/ds/asv/?4&openpath=node:319374) |