Lexical Resources in the NFDI Project Text+

Collections
Lexical Resources
Editions
Infrastructure/ Operations

Alexander Geyken Axel Herold

Berlin-Brandenburgische Akademie der Wissenschaften

Inria-ECDF Partnership Kick-Off Workshop, June 6, 2024

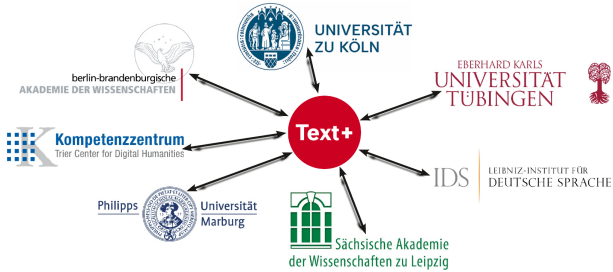
Funded by
DFG Deutsche Forschungsgemeinschaft
German Research Foundation
Project number 460033370
Part of
nfdi Nationale Forschungsdaten Infrastruktur

Outline

For a comprehensive general account on Text+, see Andreas Witt's talk.

Setup of the Task Area

BBAW	Berlin-Brandenburg Academy of Sciences and Humanities (lead)
IDS	Leibniz Institute for the German Language
SAW	Saxon Academy of Sciences and Humanities
DSA	Research Center Deutscher Sprachatlas
UniTr	University of Trier, Trier Center for Digital Humanities
UniTü	University of Tübingen
UniK	University of Cologne



Specific Goals for Lexical Resources

- provide FAIR resources
  - metadata curation
  - lexical data curation
  - persistent data storage
- create a common environment to explore and use lexical resources
- integrate with broader NFDI infrastructure
- be useful across the Humanities for a broad range of research
- provide consulting for scientists (and members of the public)

Portfolio

Three thematic clusters

- German dictionaries in a European context
- born-digital lexical resources
- non-Latin scripts

Portfolio

Three thematic clusters

- German dictionaries in a European context
- born-digital lexical resources
- non-Latin scripts

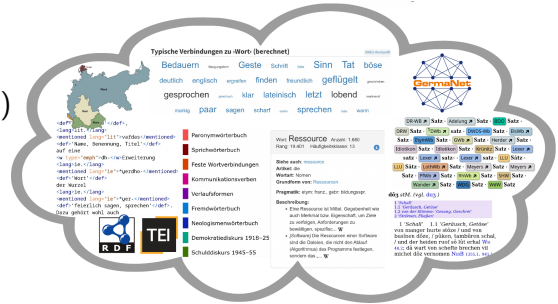
Three main data sources

- consortial partners' resources
- short-term funded partners' resources (annual calls)
- external partners' resources (in focus for second phase)

Portfolio

Consortial partners' resources

- dictionaries of present day German (BBAW, IDS, UniTü, SAW)
- dictionaries of other language stages of German (BBAW, UniTr, SAW)
- historic dictionaries (UniTr, BBAW)
- dialect dictionaries (DSA, UniTr)
- dictionaries of ancient languages (UniK)
- specialized smaller scale dictionaries (IDS)
- statistical data (BBAW, SAW)



Portfolio

Short term funded partners' resources

- Middle High German Dictionary (Trier/Göttingen, 2023)
- Lower Sorbian dictionaries (Bautzen/Cottbus, 2023)
- Corpus Glossariorum Latinorum (München, 2023)
- Thesaurus Linguae Aegyptiae (Berlin, ongoing)

$\longrightarrow$ in support of the three thematic clusters

Infrastructure

Main components and areas of work

Registry	metadata on all things Text+ (resources, services, repositories, . . .)
Repositories	provided by all Text+ partners thematically specialized open for depositing FAIR data
LexFCS	*federated content search* query lexical resources across different types of data representation
LLOD	linguistic linked open data (experimental stage)
Consulting	keeping in touch with the community provide help and support

Infrastructure

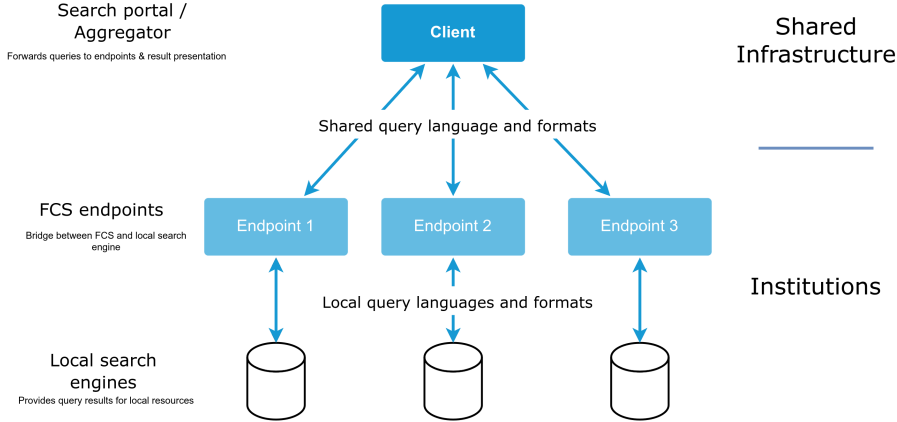
Lexical Federated Content Search (LexFCS)

- based on CLARIN FCS (for annotated text corpora)
- different underlying primary data model:
  sequence of annotated tokens (FCS)
  $\longrightarrow$ tree structures or general graphs (LexFCS, a specialized *data view*)
- several (common) serialization formats for lexical data:
  TEI, TEI Lex-0, RDF, custom formats
  - challenge: generalize all data representations for common querying
  - challange: transform return data into common format for aggregation

Eckart/Herold/Körner/Wiegand (2023): A federated search and retrieval platform for lexical resources in Text+ and CLARIN. In: Medveď et al. (eds.): *Electronic lexicography in the 21st century (eLex 2023): Invisible Lexicography. Proceedings of the eLex 2023 conference*, pp. 280–292

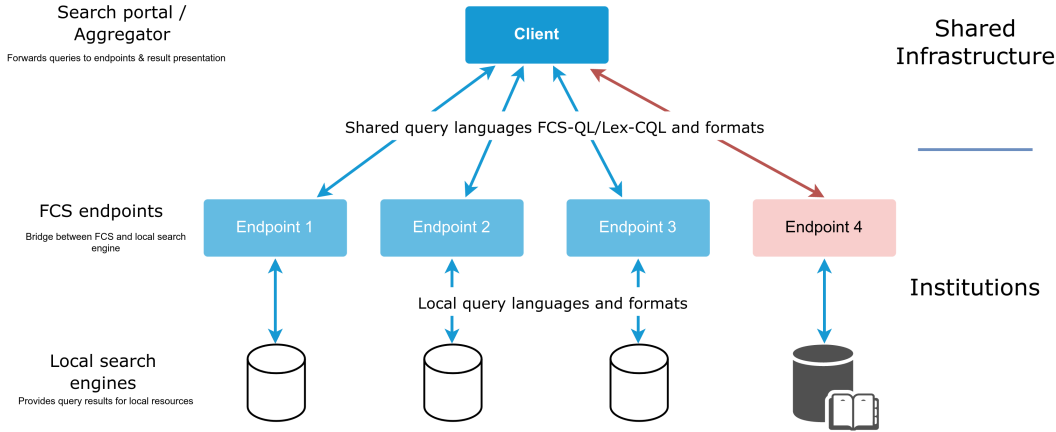
Infrastructure

FCS Architecture



Infrastructure

FCS Architecture with LexFCS extension



Infrastructure

Underlying data, EtymWB, TEI

```
<entry type="main" xml:id="E_q_9">
  <form type="headword">
    <orth extent="full">Qual</orth>
    <gramGrp>
      <pos value="N"></pos>
      <gen value="feminine">f.</gen>
    </gramGrp>
  </form>
  <div type="etym" xml:id="W_Q_9">
    <!-- ... -->
  </div>
</entry>
```

Infrastructure

Underlying data, GermaNet 11, idiosyncratic

```
<synset id="s26576" category="nomen" class="Koerper">
  <lexUnit id="l36322" sense="1" source="core"
      namedEntity="no" artificial="no" styleMarking="no">
    <orthForm>Qual</orthForm>
  </lexUnit>
  <!-- ... -->
</synset>

<wiktionaryParaphrase lexUnitId="l36322"
    wiktionaryId="w43520" wiktionarySenseId="0"
    wiktionarySense="Schmerz, Leid, etwas physisch oder
    psychisch Belastendes" edited="no" />
```

Infrastructure

From data to query

- identify common low level lexical “data types”:

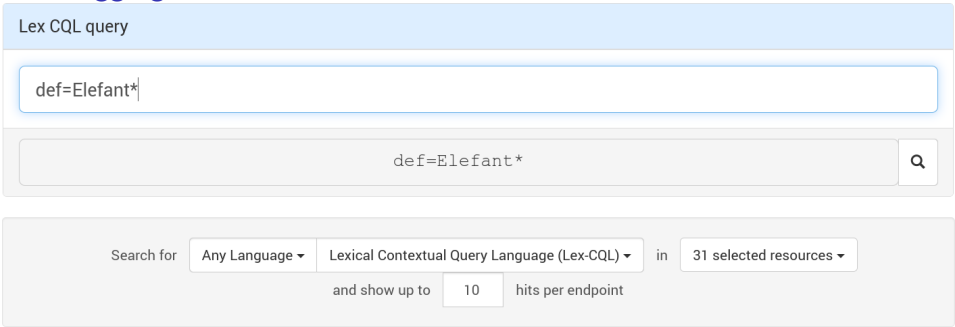
  (unspecified) full text search
  lemma headword of an entry
  pos part-of-speech, word class
  def definition, semantic paraphrase
  xr resource internal semantic relation (work in progress)
  senseRef links to external authority files (draft)

- LexCQL specification (fields, operators, return values)
- local search engines translate LexSQL into local query language
- local search engines transform results into TEI Lex-0

⟶ `https://fcs.text-plus.org/`

Infrastructure

LexFCS Aggregator



Infrastructure

LexFCS Aggregator

25 matching resources found
31 resources searched

Display as Key Word In Context Download

View

Mittelhochdeutsches Wörterbuch – Akademie der Wissenschaften und der Literatur Mainz und Akademie der Wissenschaften zu Göttingen

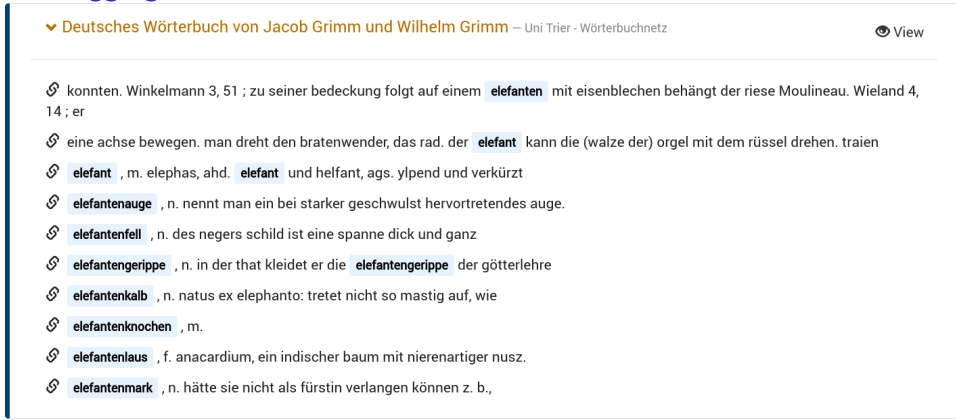
eiserne Rüstung (Ringpanzerdecke?) eines **Elefanten:**

umschlossene und überdachte Anlage (vgl. Rosenqvist 1,128, Suolahti S.119f.) auf **Elefanten** (in Bildern des 13.-15. Jhs. sowohl als mehrere Krieger schützender Verschlag wie als ...

'Elfenbein', der aus den Stoßzähnen des **Elefanten** gewonnene kostbare Werkstoff sakraler und profaner Elfenbeinschnitzerei:

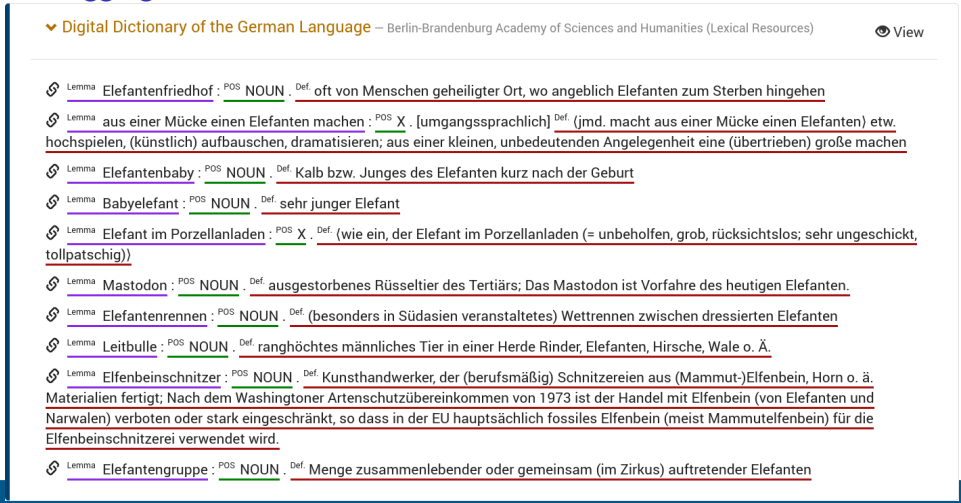
Infrastructure

LexFCS Aggregator



Infrastructure

LexFCS Aggregator



Infrastructure

Observations, summary

- (somewhat) flexible interpretation of operators (e. g. wrt capitalization)
- should be more rigid wrt return data types
  (complete article, specific part of an article?)
- provide complete mark-up or just highlight the matches?

more fundamentally:

- trade-off between *generalization* of diverse dictionary data
  and highly *targeted querying*
- so far, mostly German resources (currently 31)

Where from here?

Future work on LexFCS/LexCQL

- integrate more lexical resources
- map more basic lexical data types
  (e. g. time, space, usage labels, citations, translation equivalents, . . .)
- adapt for non-latin scripts
- adapt for external authority files
  (interface to other NFDI consortia)
- adapt for hierarchical dependencies?
- nicer ways to present results than just a flat list?

Thank you!

Collections
Lexical
Resources
Editions
Infrastructure/
Operations

This presentation was created in the context of the work of the association German National Research Data Infrastructure (NFDI) e. V. NFDI is financed by the Federal Republic of Germany and the 16 federal states, and the consortium Text+ is funded by the Deutsche Forschungsgemeinschaft (DFG, German Research Foundation) – project number 460033370. The authors would like to thank for the funding and support. Furthermore, thanks also include all institutions and actors who are committed to the association and its goals.

Funded by

DFG Deutsche Forschungsgemeinschaft
German Research Foundation

Project number 460033370

Part of

nfdi Nationale Forschungsdaten Infrastruktur