

Presented by Thorsten Trippel in the context of Text+. The NFDI consortium Text+ is funded by the German Research Foundation (DFG) – Grant number 460033370



Data for my research: Where can I get it, where do I take it, what can I do with it, how do I use it in my resume?

Looking at the Research Data Infrastructures CLARIN in Europe and Text+ in Germany

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_{rikalische Ress}

Text+

Infrastruktur / Betrieb

Contributions of:



- Development and work by the Text+ community
- ... And the CLARIN community



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EDUCATION: Ph.D. in Computational Linguistics, Bielefeld University, Bielefeld, Germany, 20XX-20XX

- Dissertation: "Exploring Language Processing Models for Sentiment Analysis"
- · Advisor; Prof. Anna Müller

M.A. in Computational Linguistics, Bielefeld University, Bielefeld, Germany, 20XX-20X

- Thesis: "Statistical Approaches to Text Classification"
- · Advisor; Prof. Hans Schmidt

B.A. in Linguistics, Bielefeld University, Bielefeld, Germany, 20XX-20XX

RESEARCH INTERESTS:

- Research Data Management
- · Graph Representations of Lexical Resources
- Standardization in Linguistics

EXPERIENCE: Researcher, University of Tübingen, Tübingen, Germany, 20XX-present

- Leading research projects on research data management, graph representations of lexical resources, and standardization in linguistics.
- Designing and implementing frameworks for managing linguistic datasets and ensuring data quality
- Collaborating with international partners to develop standards for linguistic resources

Project Leader, ISO 24622-2: Lexical Markup Framework (LMF), International Organization for Standardization (ISO), 20XX-present

- Leading the development and standardization of ISO 24622-2, focusing on graph-based representations of lexical resources
- Coordinating international working groups and stakeholders to define data models and exchange formats
- Promoting the adoption and implementation of the standard within the linguistic community

Conducting research on graph-based representations of lexical resources and their applications in computational linguistics

Analyzing and processing large-scale linguistic datasets using graph databases

Publishing research findings in academic journals and presenting at conferences

Teaching Assistant, Bielefeld University, Bielefeld, Germany, 20XX-20XX

- Assisted in teaching undergraduate courses on computational linguistics and natural language processing.
- Mentored and supervised student research projects
- Graded assignments and provided constructive feedback to students

PUBLICATIONS:

- Trippel, T., Müller, A. (20XX). "A Comparative Study of Sentiment Analysis
 Techniques on Social Media Data." Journal of Computational Linguistics, 25(2),
 123-145.
- Trippel, T., Schmidt, H. (20XX). "Statistical Approaches to Text Classification: A Review." Proceedings of the International Conference on Natural Language Processing, 345-356.
- Trippel, T., Müller, A., Schmidt, H. (20XX). "Graph-Based Representation of Lexical Resources: An Overview," Journal of Language Resources and Standardization, 30(4), 567-589.

Research Associate, Leibniz-Institut of German Language (IDS), Mannheim, Germany, 20XX-present

rin-d.net

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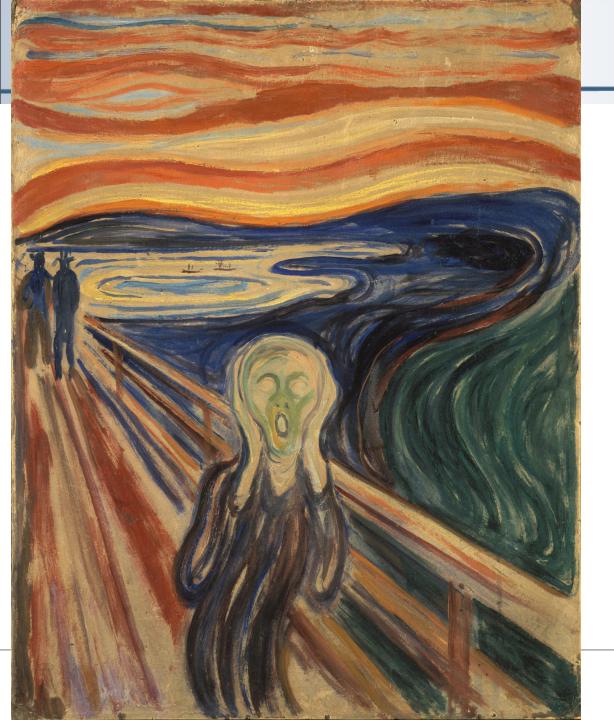
> > omparative Study of Sentiment Analysis Journal of Computational Linguistics, 25(2),

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The Scream
(MM.M.00514) by
Edvard Munch, 1910
https://commons.wik
imedia.org/wiki/File:
Edvard_Munch__The_Scream__Google_Art_Project.
jpg

What's at stake! Honest(I)y!



- Reproducibility crisis
- Empirical turn



What's at stake! Honest(I)y!



- Reproducibility crisis
- Empirical turn
- ChatGPT

Reproducibility Crises





Can you make bullet points out of that?



Sure, here are the main points summarized as bullet points:

- The reproducibility crisis refers to the problem of many scientific studies b difficult or impossible to reproduce.
- The crisis is fueled by factors such as the pressure to publish, selective reporting of results, underpowered studies, and cultural issues in the scien community.
- To address the reproducibility crisis, proposed solutions include greater transparency, open data, pre-registration of studies, and improved statistic training for researchers.
- Addressing this multifaceted issue will require a concerted effort from scientists, publishers, funders, and institutions to promote a more rigorous collaborative scientific culture.



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Empirical Turn





Sure, here are the main points of the empirical turn in the humanities and social sciences summarized as a bulleted list:

- The empirical turn is a growing trend in the humanities and social sciences towards using empirical research methods to study human behavior and social phenomena.
- Factors driving the empirical turn include the increasing availability of data,
 especially with the rise of digital technology and the internet.
- Empirical research methods can provide more objective and quantitative measures of human behavior and social phenomena, and can help to identify patterns and relationships that may not be immediately apparent through more qualitative methods.
- However, there are also criticisms of the empirical turn, particularly with regards to the potential loss of focus on more interpretive and subjective approaches to studying human behavior and social phenomena.
- Additionally, there are concerns about the potential misuse or misinterpretation of data, particularly in fields where there is a lack of standardized methods for collecting and analyzing data.
- The empirical turn represents an ongoing debate about the role of empirical research methods in the humanities and



Empirical Turn



Example for empirical turn and reproducibility crisis: ChatGPT

» ChatGPT:

» large language model

» Training involves large sets of language data

» Language data is research data in the humanities – and in Al

» Empirical Research (!)

» Asking twice not always provides the same answers

» Where is the source of ChatGPT's "facts"? Who gets credited for the actual research?

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collecting and analyzing data.

 The empirical turn represents an ongoing debate about the role of empirical research methods in the humanities and

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Empirical Turn



Example for empirical turn » Honesty plasiarism. » Honesty plasiarism. » re Aldriver plasiarism. reproducibility crisis.

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Bundesministerium für Bilduna und Forschung

www.clarin-d.net

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social

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The return of integrity

- Coming soon?
- Produced by DALL-E, with the prompt
 Generate a film poster for "Return of Integrity" in the style of a Star Wars poster. include a scholar, a microscope, a manuscript and a microphone https://labs.openai.com/



Return of Integrity: Research Data Management



- Archiving empirical data
- Reproducing statistical results by storing the formulae and data
- Making the data accessible

Hypotheses 1:



- Research questions based on empirical information require data
- Digital Methods allow processing data that cannot be processed without them (in a reasonable time)
- Data needs to be found, collected, evaluated and at least pre-processed to be available for further processing

Hypotheses 2:



- Data mining and data analysis require digital/digitized data
 - Depending on the methods applied, the data needs structures
 - There is no such thing as unstructured data sometimes the structures may be hidden
 - Data analysis depends on the research question



Hypotheses 3:



- Providing research results based on empirical data requires some form of visualization.
- Figures and tables are typical forms of visualizing data
- Textual descriptions may also be a form of visualization

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Hypotheses 4:



- Reproducibility of results is a quality indicator
 - Reviewers need access to underlying data
- Data may be reused for different research purposes
 - Dual use (!)
 - Alternative use
 - Later use
 - Meta use



Reproducibility



- Hypothesis: same source "situation" ⇒ same results
 - BUT: statistical deviations
 - Non-reproducible events
 - (Technical) deviations in the analysis, e.g. interpretation
- Hypothesis: Reproducibility is a sign of quality
 - (see above)

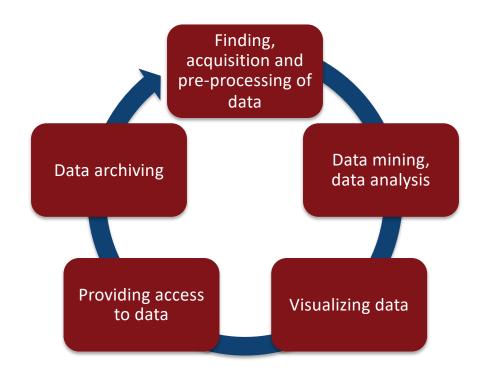


Hypotheses 5:

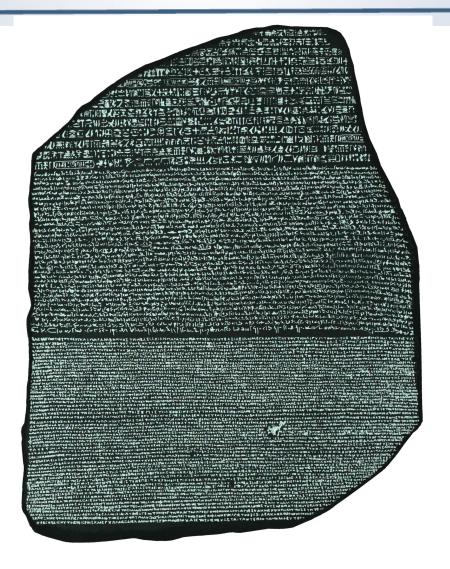


- Long term access to data requires archiving providing defined access to the data
- Scholars will not be able to sustainably provide access to the data themselves.











FAIR und CARE



- Findable
- Accessible
- Interoperable
- Reusable

Wilkinson, Mark D et al. (2016). "The FAIR Guiding Principles for scientific data management and stewardship". In: Scientific data 3.

- » Collective Benefit
- » Authority to control
- » Responsibility
- » Ethics

Carroll, Stephanie Russo, Edit Herczog, Maui Hudson, Keith Russell, and Shelley Stall (Apr. 2021). "Operationalizing the CARE and FAIR Principles for Indigenous data futures". In: Scientific Data 8.1, p. 108. url: https://doi.org/10.1038/s41597-021-00892-0.



- 1. To be **Findable** any Data Object should be uniquely and persistently identifiable
 - The same Data Object should be re-findable at any point in time, thus Data Objects should be **persistent**, with emphasis on their metadata,
 - A Data Object should minimally contain basic machine actionable metadata that allows it to be distinguished from other Data Objects
 - Identifiers for any concept used in Data Objects should therefore be **Unique** and **Persistent**





- 2. Data is **Accessible** in that it can be always obtained by machines and humans
 - Upon appropriate authorization
 - Through a well-defined protocol
 - Thus, machines and humans alike will be able to judge the actual accessibilty of each Data Object.





3. Data Objects can be Interoperable only if:

- (Meta) data is machine-actionable
- (Meta) data formats utilize shared vocabularies and/or ontologies
- (Meta) data within the Data Object should thus be both syntactically parseable and semantically machine-accessible





4. For Data Objects to be **Re-usable** additional criteria are:

- Data Objects should be compliant with principles 1 3
- (Meta) data should be sufficiently well-described and rich that it can be automatically (or with minimal human effort) linked or integrated, like-with-like, with other data sources
- Published Data Objects should refer to their sources with rich enough metadata and provenance to enable proper citation.



Condition for citation: (FAIR) archiving



- Non reproducible data
 - Amount of data/work involved for creation or collection of data
 - Non reproducible events
- Reproducible data
 - "recipe" including technical environments, selection criteria, (acceptable) statistical variance, ...



https://www.gida-global.org/s/CARE-Principles_One-Pagers-FINAL_Oct_17_2019.pdf

The CARE Principles





Collective Benefit

Data ecosystems shall be designed and function in ways that enable Indigenous Peoples to derive benefit from the data.

For inclusive development and innovation

Governments and institutions must actively support the use and reuse of data by Indigenous nations and communities by facilitating the establishment of the foundations for Indigenous innovation, value generation, and the promotion of local self-determined development processes.

C2 For improved governance and citizen engagement

For equitable outcomes

aspirations for wellbeing.

Data enrich the planning, implementation, and evaluation processes that support the service and policy needs of Indigenous communities. Data also enable better engagement between citizens, institutions, and governments to improve decision-making. Ethical use of open data has the capacity to improve transparency and decision-making by providing Indigenous nations and communities with a better understanding of their peoples, territories, and resources. It similarly can provide greater insight into third-party policies and programs affecting Indigenous Peoples.

Indigenous data are grounded in community values, which extend to society at large. Any value created from Indigenous data should benefit Indigenous communities in an equitable manner and contribute to Indigenous



CARE includes (also outside of anthropology):



- Pay and credit
- Publish results (Zero results? What if the publication has a negative impact?)
- Privacy law (GDPR, but publication?)
- Respect ethics and legal obligations



Tell me more: How?



CLARIN



- Common Language Resources and Technology Infrastructure
- ESFRI Project
- Target group: Humanities scholars and social scientists working in language-based research
 - Language as a research tool and as a research object

CLARIN in Europa



- Austria
- Belgium
- Bulgaria
- Croatia
- Cyprus
- Czech Republic
- Denmark
- Estonia
- Finland

- » Germany
- » Greece
- » Hungary
- » Iceland
- » Italy
- » Latvia
- » Lithuania
- » The Netherlands
- » Norway

- » Poland
- » Portugal
- » Slovenia



>>

- South Africa
- Switzerland
- United Kingdom
 - Carnegie Mellon University (USA)



The situation in Germany



German National Research Data Infrastructure (NFDI)

_ CLARIN-D

Based on a decision by the federal government and the states in 2018: Construction of a German national research data Infrastructure

Aim: ensuring access and long time archiving of data resources

- » Implementing the FAIR principles
- » Discipline independent and not bound to individual states

"The NFDI is being established in a science-driven process as a networked structure of consortia acting on their own initiative."

"Die NFDI wird in einem aus der Wissenschaft getriebenen Prozess als vernetzte Struktur eigeninitiativ agierender Konsortien aufgebaut."

https://www.dfg.de/foerderung/info_wissenschaft/2020/info_wissenschaft _20_29/index.html



NFDI Vision





Data as a common asset for excellent research, organized by research in Germany.

NFDI Mission



Step by step, we are improving the possibilities for using data for science and society. Through our collaboration in the NFDI Association, an umbrella organization for research data management in all branches of science is emerging. In collaboration with national and international partners, we are creating the framework for legally compliant, interoperable and sustainable data infrastructures that are readily accessible to researchers in their everyday work. We train, strengthen competence in handling data, and open up new career paths.

Text+ in one sentence



Text- and language based research data are at the centre of the Text+ research data infrastructure within initiative to establish a National Research Data Infrastructure (NFDI). Text+ focusses on three data domains: collections, lexical resources, and editions.

FOCUS: COLLECTIONS LEXICAL Editions
RESOURCES

Bundesministerium für Bildung und Forschung

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Distributed infrastructure

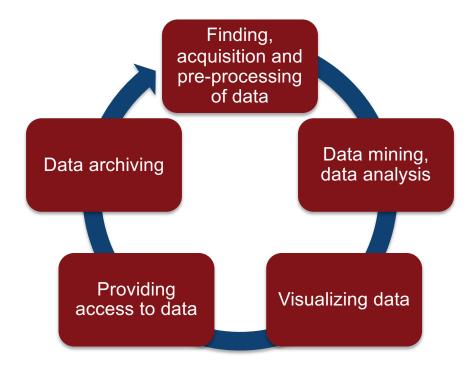
- Located at different institutions
- Legacy data sets
- Data formats
- Query interfaces





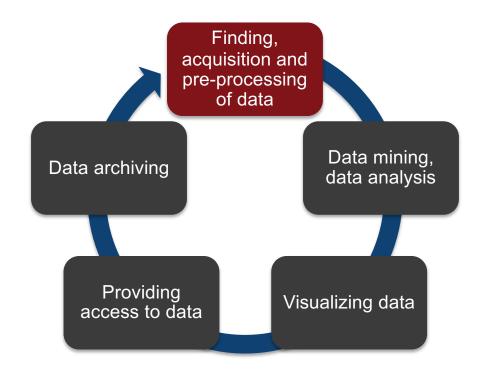
(One) Research data life cycle





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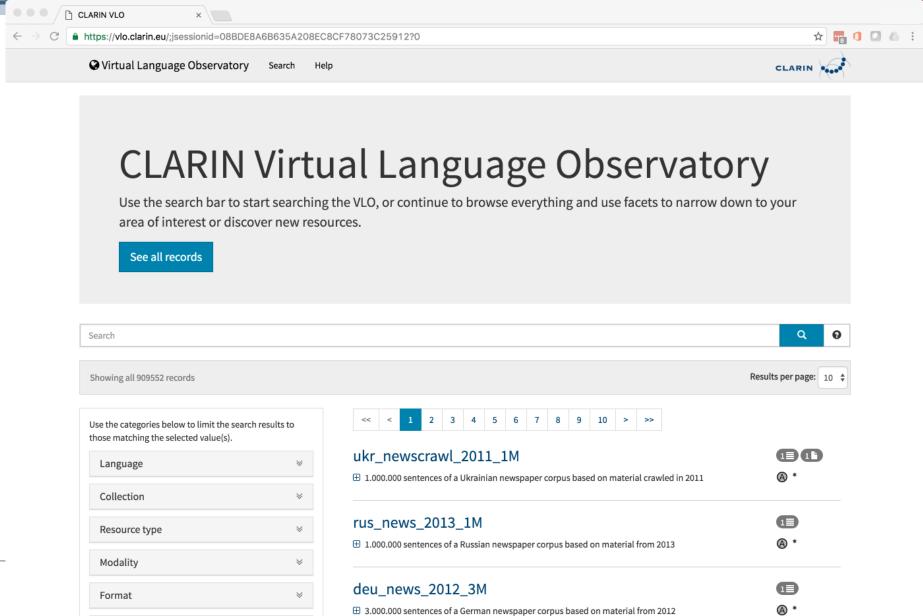






VLO: Virtual Language Observatory – A search engine for Research data supporting Findability





TA collections data set: Deutsches Referenzkorpus



- » Language Resources
- » Modern German
- » 53 Billion words
- » Collected and maintained since the 1960's
- » Newspapers, political speeches, books, fairy tales,
- » Includes copyright protected resources
- » Host: IDS Mannheim





https://www.ids-mannheim.de/digspra/kl/projekte/korpora/



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TA collections data set: The German Text Archive



Das DTA in Zahlen

recherchieren.

Das DTA am 6. Juli 2022

Sie können in 4448 Werken

Weitere Zahlen finden Sie hier.

als Ausgangsort der Reformation, Leopol-

von Ranke beschreibt im zweiten Band

Folge des Wormser Reichstags in

Neue Werke im DTA

seiner Deutschen Geschichte im Zeitaltei der Reformation die Unruhen, die sich in

Wittenberg zutrugen und in deren Zentrur

die Universität stand. Später sollten diese

Ranke, Leopold von: Deutsche

Reformation. Bd. 2. Berlin, 1839

Geschichte im Zeitalter der

Unternehmungen auch als "Wittenberger Bewegung" bekannt werden.

Am 6. Juli 1502

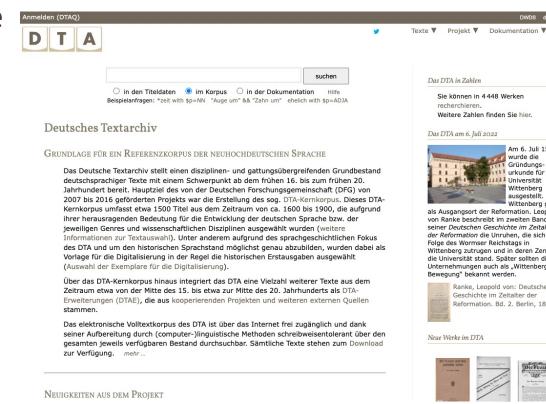
wurde die Gründungs-

Universität Wittenberg

ausgestellt.

Wittenberg gil

- » German texts from the 16th to the 20th century
- » 1500 titles
- » Available in different formats, including raw text, TEI XML, ...
- » Mostly open CC-BY-SA licenced
- » Host: BBAW Berlin

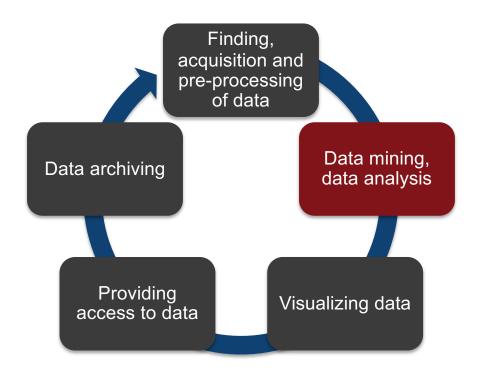


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https://www.deutschestextarchiv.de/

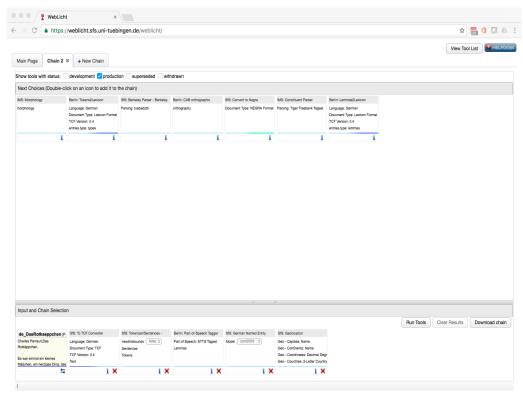




Virtual research environment for text annotation: WebLicht



- » Webapplication with various essential tools when working with language data, including
 - » Tokenizer
 - » Parser
 - » Named Entity Recognizer
- » Multi-language support
- » Academic login required
- » Host: University of Tübingen



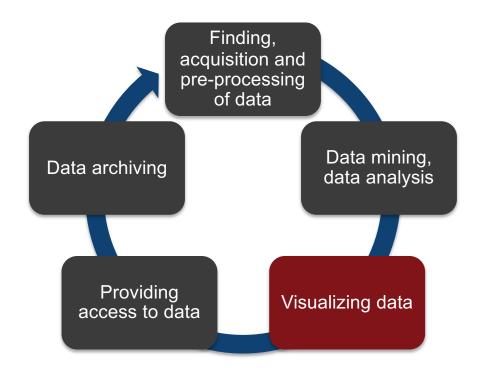


https://weblicht.sfs.uni-tuebingen.de/



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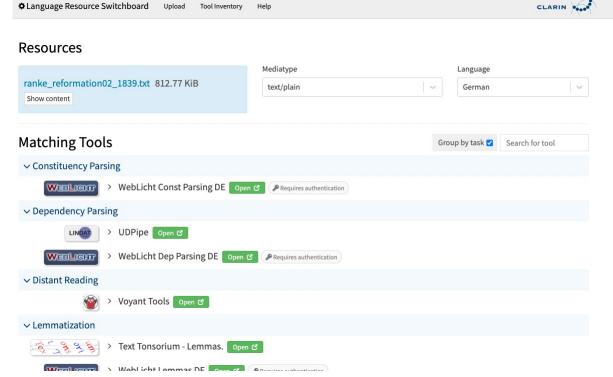


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Integration of external tools for visualizing (and analysis)



- » For example integrated in DTA
- » Here: viareference to theLanguageResourceSwitchboard
- » Reference to many other tools





https://switchboard.clarin.eu/#/vlo/http%3A%2F%2Fwww.deutschestextarchiv.de%2Fbook%2Fdownload_txt%2Franke_reformation02_1839%2Ftext%2Fplain



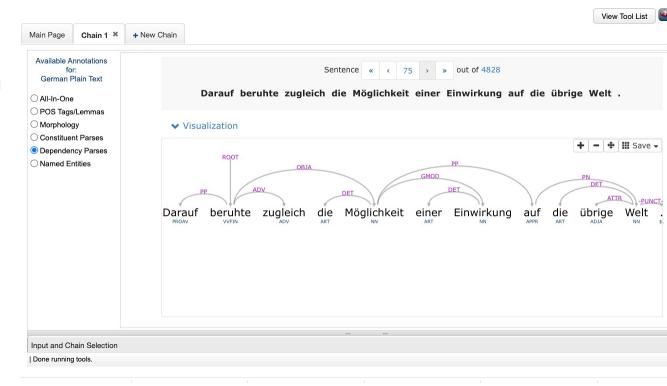
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und Forschung

Visualization with Tündra



- » Integrated in Virtual Research Environment WebLicht
- » For searching and visualizing syntactic annotations
- » Host: University of Tübingen





nπps://webiicnr.sfs.uni-tuebingen.de/weblicht/

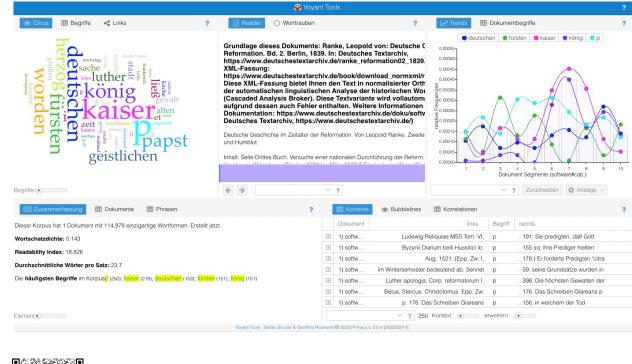
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Integration of external tools for distant reading



- » For example integrated in DTA
- » Here: Voyanttools

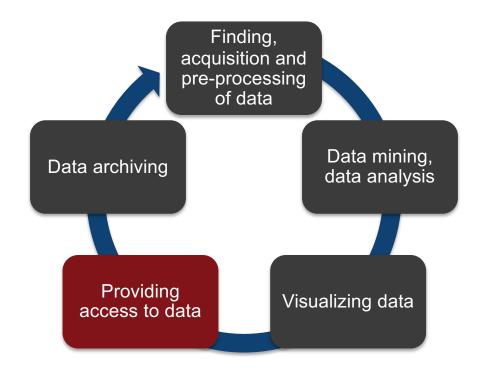




https://voyant-tools.org



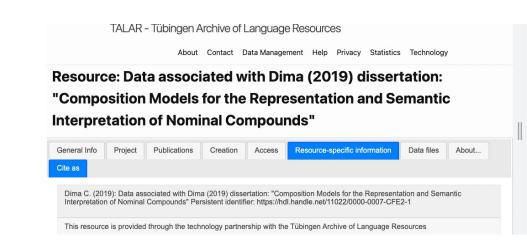




Persistent Identification to cite data



- » For reference in publications and citation of data
- » Allows readers to receive (information on) access to the data
- » Example:
 - » Handle:
 https://hdl.handle.net/11022/0000-0007-CFE2-1
 - » Persistent URLs:
 https://www.deutschestextarchiv.de/r
 ankerreformamtion02 1839
 - » DOIs: <u>10.5281/zenodo.3735141</u>



URL zu diesem Werk: https://www.deutschestextarchiv.de/ranke_reformation02_1839

URL zu dieser Seite: https://www.deutschestextarchiv.de/ranke_reformation02_1839/18

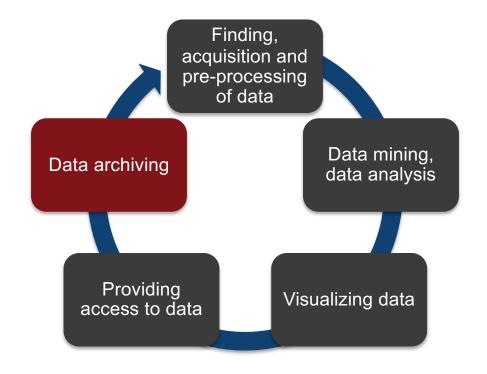
Zitationshilfe: Ranke, Leopold von: Deutsche Geschichte im Zeitalter der Reformation

https://www.deutschestextarchiv.de/ranke reformation02 1839/182

Blaette, Andreas (2020): GermaParl. Linguistically Annotated and Indexed Corpus of Plenary Protocols of the German Bundestag. CWB corpus version 1.0.6. https://doi.org/10.5281/zenodo.3735141







Archiving



- » Distributed over many institutions
 - » According to their specialization
 - » Processes to allow depositing of data of third parties
 - » All partners mentioned hosting data for the community
- » Open to new partners
 - » Reliability (certification)
 - » Relevance to the Text+ domains
 - » Standard interfaces
- » Fall back: bitstream preservation



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How can I get my data on my CV?



- If you produce data
 - Store it in a credible repository with a persistent identifier
- If you used data
 - Cite it with the persistent identifier
- If you analysed data
 - Refer to the tools with a persistent identifier
- List your data on your CV just as any other citation!



How can I get my data on my CV?



- If you produce data
 - Store it in a credible repr ith a persistent identifier

- If you used data
 Cite it with the liverage of the cite of the tool of the apersistent identifier
 Refer to the tool of the apersistent identifier
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How can I get my data on my CV?



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- If you produce that

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 identifier
 If you used character and CARE for your

 If you used character and CARE for your
 - Cite it with the Journal
 If you analyse a persistent identifier

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