

Modeling Drama Corpora in CIDOC-CRM

Ingo Börner (University of Potsdam)







DraCor

or: why am I here?

← Tweet



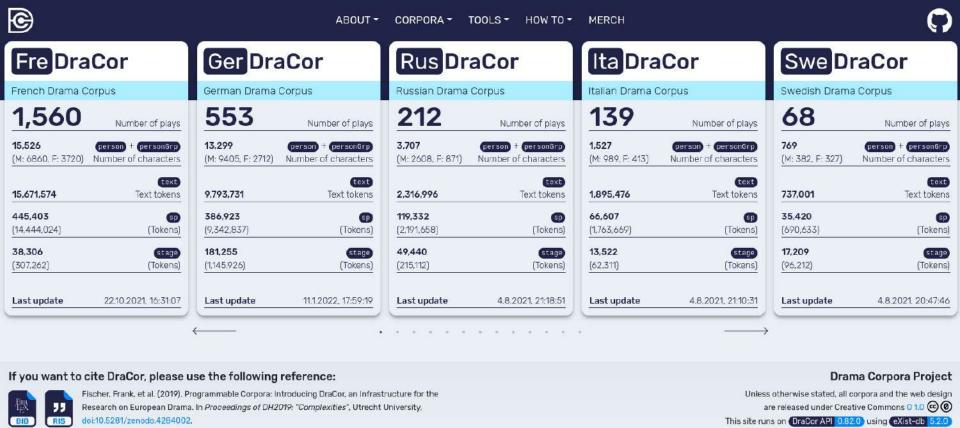
@fpianz@mstdn.social
@fpianz

...

"4 weeks as a TNA fellow saved me 6 months of work"

Thanks to my hosts @ingoboerner @peertrilcke @DH_Potsdam

Tweet übersetzen



https://dracor.org







German Drama Corpus

Edited by Frank Fischer and Peer Trilcke. Features more than 500 German-language plays from the 1730s to the 1940s. For a corpus description and full credits please see the README on GitHub.

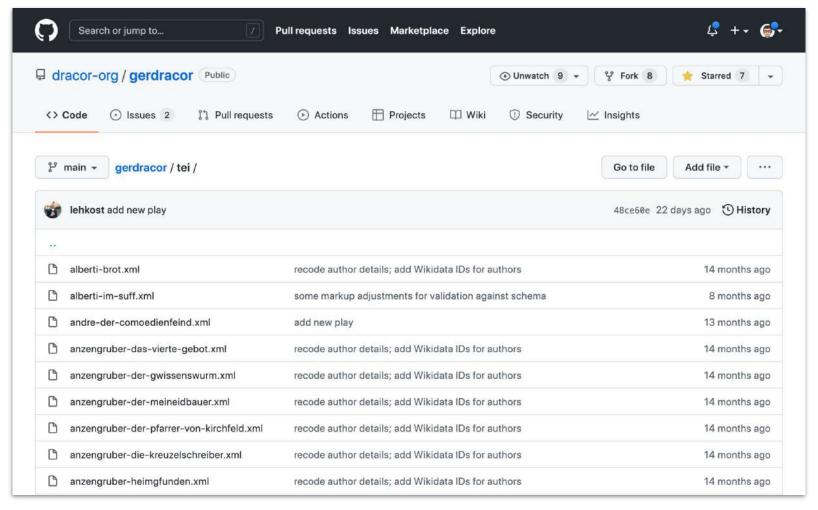
Search

Corpus licensed under CCO © @

Download a comprehensive table with metadata on all plays in the corpus: JSON CSV

| Authors ▲▼ | Title ▲ ▼ | Year (normalized) ▲ ▼ 3 | Network Size ▲▼ | Source ▲▼ | ID ▲▼ |
|-------------------|---|---------------------------------|-----------------|----------------------------------|-----------|
| Gryphius, Andreas | Leo Armenius oder Fürsten-Mord Trauer-spiel 11 Q1818468 | 1650 1646 | 37 | TextGrid Repository TEI version | ger000546 |
| Gryphius, Andreas | Horribilicribrifax Teutsch Scherzspiel IIII Q20984917 | 1650 1647-1650 1674 ■ 1663 | 21 | TEI version | ger000549 |
| Gryphius, Andreas | Carolus Stuardus Trauerspiel III Q42187688 | 1650 1649 | 55 | TextGrid Repository TEI version | ger000550 |
| Gryphius, Andreas | Catharina von Georgien oder Bewehrete Beständigkeit Trauerspiel | 1651 1647 № 1651 ■ 1657 | 22 | TEI version | ger000548 |

Overview-Page of GerDraCor: https://dracor.org/ger

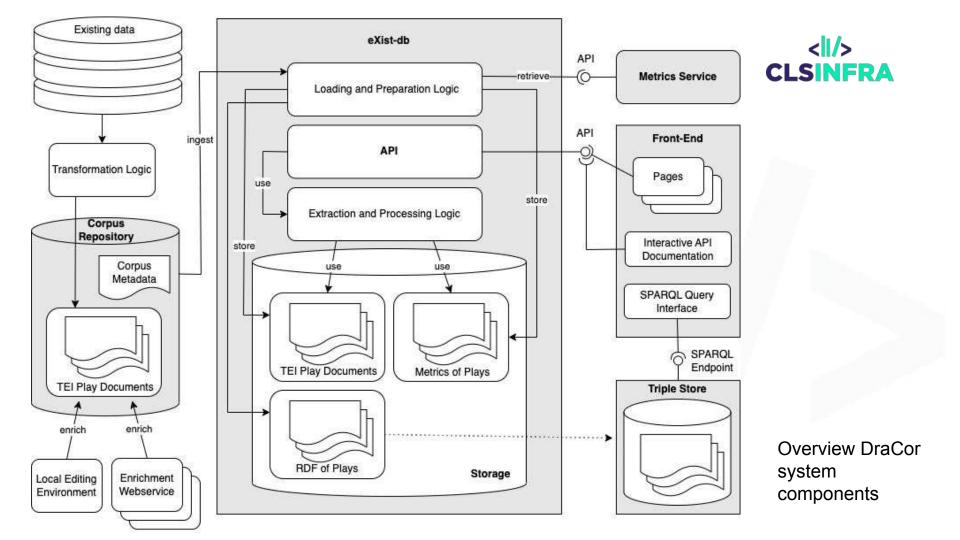


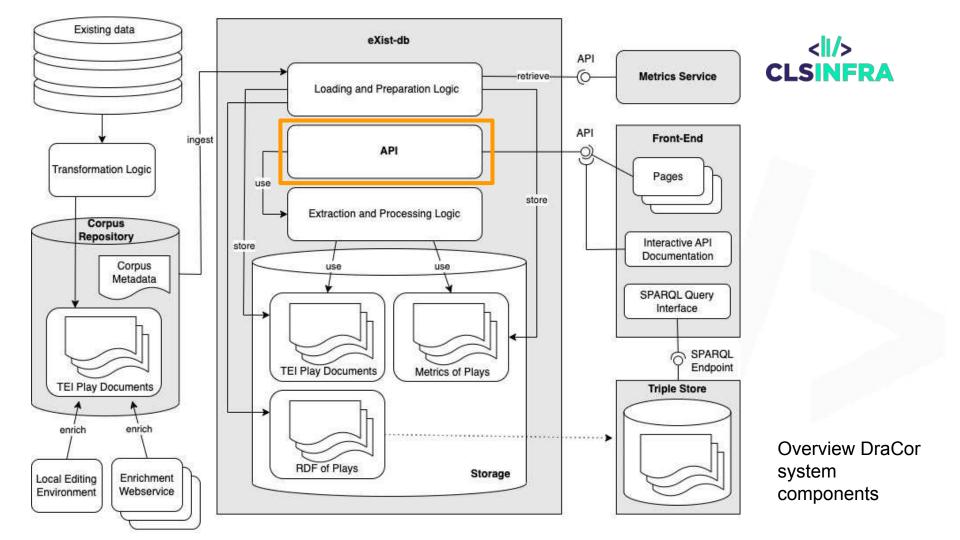
GerDraCor-Data on Github: https://github.com/dracor-org/gerdracor

Dramatic Texts encoded in TEI

```
<sp who="#dietrich">
 <speaker>DIETRICH</speaker>
 <stage>großer starker Mann mit kohlschwarzem Bart, wirft die Würfel mit großem Geräusch
   auf.</stage>
 Neun!
</sp>
<sp who="#helldrungen">
 <speaker>HELLDRUNGEN</speaker>
 <stage>wirft.</stage>
 Zehn!
</sp>
<sp who="#dietrich">
 <speaker>DIETRICH.</speaker>
 Helldrungen, ihr haltet's mit dem Teufel! Und wenn ich den letzten Stein von meiner
   Burg verlieren soll - hundert Gulden gegen die Rosse und deinen Fichtenwald!
</sp>
<sp who="#erich">
 <speaker>ERICH.</speaker>
 Schwäher, euer Geld ist zu Rande.
 <pb n="3"/>
</sp>
```







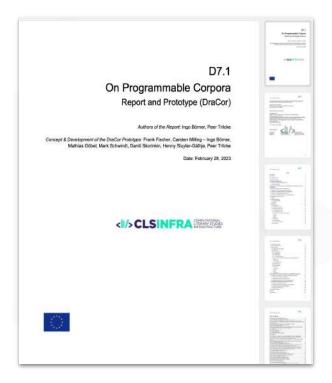
DraCor as a Prototype of a Programmable Corpus



"Programmable Corpora — Corpora that expose an open, transparently documented and (at least partly) research-driven API to make texts machine-actionable."

(Working Definition in CLS INFRA D7.1 'On Programmable Corpora')

... inspired by Aaron Swartz's metaphor of a "natural growth" of APIs out of web resources (Swartz: A Programmable Web): APIs are not only added, but almost "naturally grow out of" corpora



APIs can ...



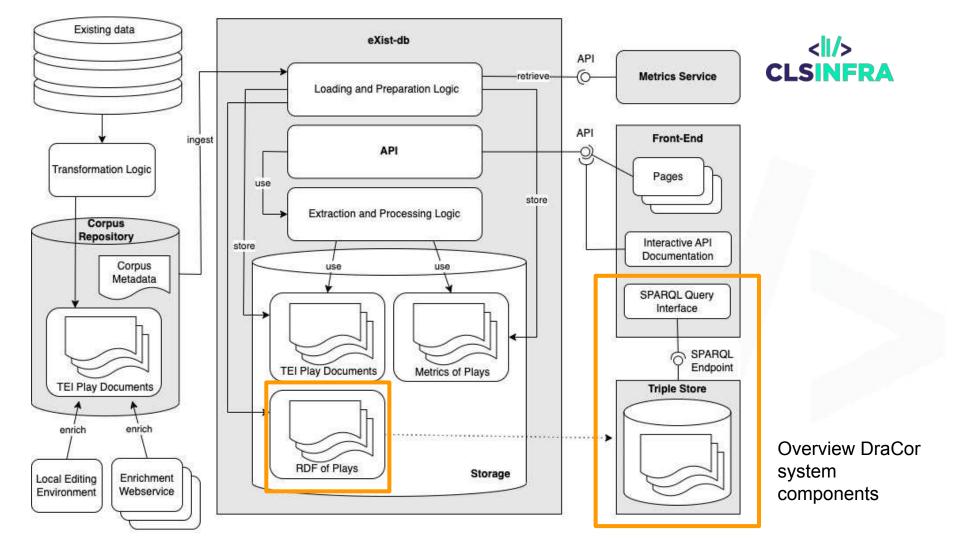
- support the stabilization of epistemic objects in CLS
- ☐ facilitate the standardization of (some) CLS workflows
- simplify working with digital materials and applying digital methods in CLS
- be possible solutions for working with copyright-protected material in CLS





Servers https://dracor.org/api ~ public /info API info /corpora List available corpora /corpora/{corpusname} List corpus content /corpora/{corpusname}/metadata List of metadata for all plays in a corpus /corpora/{corpusname}/metadata/csv List of metadata for all plays in a corpus /corpora/{corpusname}/metadata.csv List of metadata for all plays in a corpus /corpora/{corpusname}/play/{playname} Get metadata and network metrics for a single play /corpora/{corpusname}/play/{playname}/metrics Get network metrics for a single play /corpora/{corpusname}/play/{playname}/tei GetTEI document of a single play

OpenAPI Specification of the DraCor API





Linked Data in DraCor

A very "practical" perspective

"LOD-friendly"?



"In Anlehnung an das Projekt »Programmable Web« – das eine Datenbank von offenen APIs unterhält und dessen Slogan lautet: »APIs, Mashups and the Web as Platform« (zugänglich unter https://www.programmableweb.com/) – schlagen wir für infrastrukturell-forschungsorientierte, offene, erweiterbare und **LOD-freundliche** Korpora den Begriff ›Programmable Corpora‹ vor." (Fischer et al. 2019a)

Fischer, Frank, Ingo Börner, u. a. "Programmable Corpora: Die digitale Literaturwissenschaft zwischen Forschung und Infrastruktur am Beispiel von DraCor". DHd2019: »Digital Humanities: multimedial & multimedial « . 25–29 March 2019. Book of Abstracts, Johannes Gutenberg University Mainz/Goethe University Frankfurt, 2019, S. 194–97.

"In allusion to the project "ProgrammableWeb" – which maintains a database of open APIs and whose slogan is: "APIs, Mashups and the Web as Platform" (accessible at https://www.programmableweb.com/) – we propose the term 'Programmable Corpora' for research-oriented corpora providing an API." (Fischer et al. 2019b)

Frank Fischer et al.: Programmable Corpora: Introducing DraCor, an Infrastructure for the Research on European Drama. Proceedings of DH2019: »Complexities«, Utrecht, doi:10.5281/zenodo.4284002.



Leo Armenius oder Fürsten-Mord



Andreas Gryphius

IIII Q77214

b. 1616, Głogówd. 1664, Głogów

Trauer-spiel



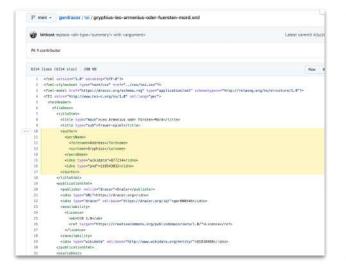
Q1818468

\$ 1646

1651

Pro Con

Ger DraCor



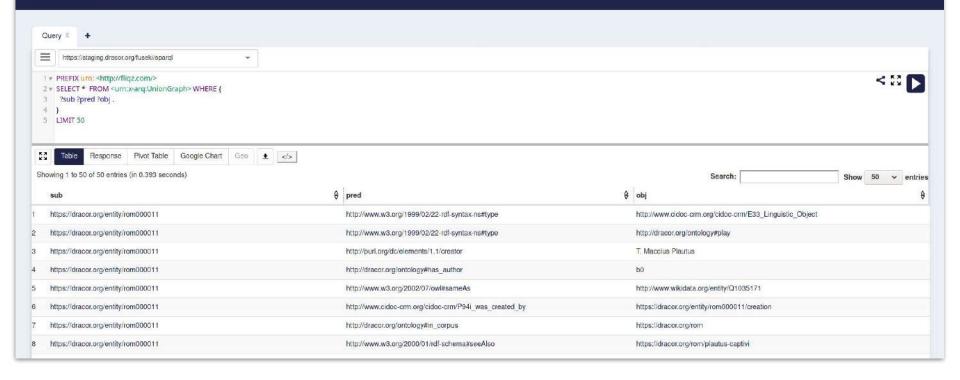


| territy memo | Gryphius - 0 references | edt + seld reference + seld value |
|----------------|--|-----------------------------------|
| date of birth | 2 Closter 1616 (Pophian nasach for prefered ratio 4 refurences | Post |
| | § 1616 +1 reference | Pedt |
| | | + add value |
| place of birth | Glogde 3 references | ozi |
| | | + add within |
| date of death | 15 July 1564 Disputed to topological topol | ≯ odt |
| | 8 1664 + 1 reference | / odl |
| | | + add when |





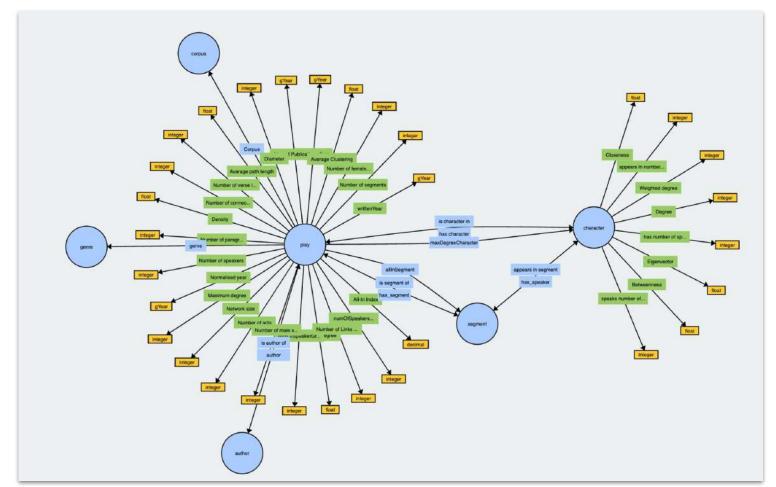
SPARQL





DraCor Ontology

A result of Rapid Prototyping



DraCor Ontology



"Aligning" the DraCor Ontology with CIDOC-CRM

A first attempt of going into the "Salt Mines of the Semantic Web"

£

MORGAN & CLAYPOOL PUBLISHERS

| ~ | | | | | | | | |
|------------|------------------|---------------------|-----------------|--------------|------------|------|-------|-----------------------------|
| Hello. Sig | n in to personal | lize your visit. No | ew user? Re | egister now. | | | | |
| Home | Synthesis | Colloquium | Search | Profile | Author | Help | About | Bookstore |
| Quick se | arch: Enter keyw | vord v | vithin: All ser | es | ▽ @ | | | |
| | | | | | | | | Home Series home > Abstract |

Aaron Swartz's A Programmable Web: An Unfinished Work Synthesis Lectures on the Semantic Web: Theory and Technology

February 2013, 64 pages, (https://doi.org/10.2200/S00481ED1V01Y201302WBE005)

Aaron Swartz

Abstract

This short work is the first draft of a book manuscript by Aaron Swartz written for the series "Synthesis Lectures on the Semantic Web" at the invitation of its editor, James Hendler. Unfortunately, the book wasn't completed before Aaron's death in January 2013. As a tribute, the editor and publisher are publishing the work digitally without cost.

From the author's introduction:

"... we will begin by trying to understand the architecture of the Web — what it got right and, occasionally, what it got wrong, but most importantly why it is the way it is. We will learn how it allows both users and search engines to co-exist peacefully while supporting everything from photosharing to financial transactions.

We will continue by considering what it means to build a program on top of the Web — how to write software that both fairly serves its immediate users as well as the developers who want to build on top of it. Too often, an API is bolted on top of an existing application, as an afterthought or a completely separate piece. But, as we'll see, when a web application is designed properly, APIs naturally grow out of it and require little effort to maintain.

Then we'll look into what it means for your application to be not just another tool for people and software to use, but part of the ecology — a section of the programmable web. This means exposing your data to be queried and copied and integrated, even without explicit permission, into the larger software ecosystem, while protecting users' freedom.

Finally, we'll close with a discussion of that much-maligned phrase, 'the Semantic Web,' and try to understand what it would really mean."

Table of Contents: Introduction: A Programmable Web / Building for Users: Designing URLs / Building for Search Engines: Following REST / Building for Choice: Allowing Import and Export / Building a Platform: Providing APIs / Building a Database: Queries and Dumps / Building for Freedom: Open Data, Open Source / Conclusion: A Semantic Web?

PDF (1615 KB) PDF Plus (1616 KB)



Data, Semantics, and Knowledge

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Author:

Aaron Swartz

"I too did my time in the Semantic Web salt mines."

"Many of them have gone around talking about the 'Semantic Web' in which our computers would be finally capable of 'machine understanding'."

"They formed committees to form working groups to write drafts of ontologies that carefully listed (in 100-page Word documents) all possible things in the universe and the various properties they could have, and they spent hours in Talmudic debates over whether a washing machine was a kitchen appliance or a household cleaning device." [...] (Swartz 2013)

doi:10.2200/S00481ED1V01Y201302WBE005







Activities Resources Community

Search

Q

What's New?

Home

The 53rd CIDOC CRM and 46th FRBR CRM, was announced.

The 54th CIDOC CRM and 47th FRBR CRM, was announced.

The 55th CIDOC CRM and 48th FRBR CRM, was announced.

Most recent versions

Current version

Last official version

Previous official version

Choose a shortcut

Compatible models & Collaborations

Link to old CIDOC CRM website

Next meeting

Use cases

CIDOC CRM Tutorial

CIDOC CRM Website designs and logos

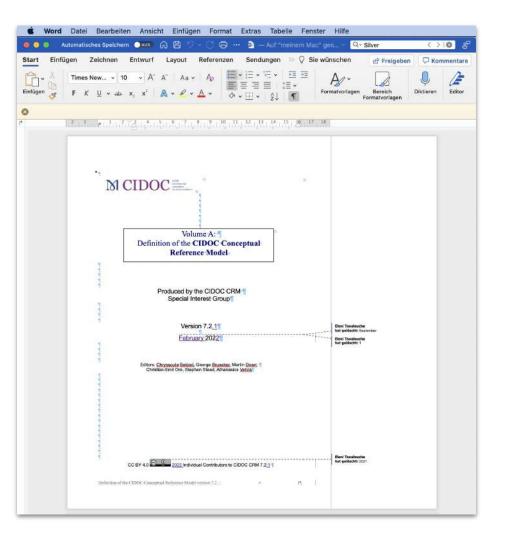
What is the CIDOC CRM?

The CIDOC Conceptual Reference Model (CRM) is a theoretical and practical tool for information integration in the field of cultural heritage. It can help researchers, administrators and the public explore complex questions with regards to our past across diverse and dispersed datasets. The CIDOC CRM achieves this by providing definitions and a formal structure for describing the implicit and explicit concepts and relationships used in cultural heritage documentation and of general interest for the querying and exploration of such data. Such models are also known as formal ontologies. These formal descriptions allow the integration of data from multiple sources in a software and schema agnostic fashion.

The CIDOC CRM has been developed in a manner that is intended to promote a shared understanding of cultural heritage information by providing a common and extensible semantic framework for evidence-based cultural heritage information integration. It is intended to be a common language for domain experts and implementers to formulate requirements for information systems and to serve as a guide for good practice of conceptual modelling. In this way, it can provide the "semantic glue" needed to mediate between different sources of cultural heritage information, such as that published by museums, libraries and archives.

The CIDOC CRM is the outcome of over 20 years of development and maintenance work, originally by the CIDOC Documentation Standards Working Group and, presently, by the CIDOC CRM SIG, both of which are working groups of CIDOC. Since December, 2006, it has been recognized as an official ISO standard. This status was renewed in 2014 and can be found at ISO 21127:2014.

The CIDOC CRM is a living standard that is designed in such a way as to provide both high level information retrieval and the formulation and documentation of very specific data points and questions. The CIDOC CRM thus consists of the CRMbase standard which provides the basic classes and relations devised for the cultural heritage world. This base ontology is complemented by a series of modular extensions to the basic model. Such extensions are designed to support different types of specialized research questions and documentation such as bibliographic documentation or geoinformatics. The CIDOC CRM extensions are developed in partnership with the research communities in question. These extensions are formulated in a manner that is harmonized with the base ontology such that data expressed in any extension is compatible with the base system of concepts and relations. This harmonized development process leads to a high level of information integrity and integration not available in other information systems.



* E13 Attribute Assignment

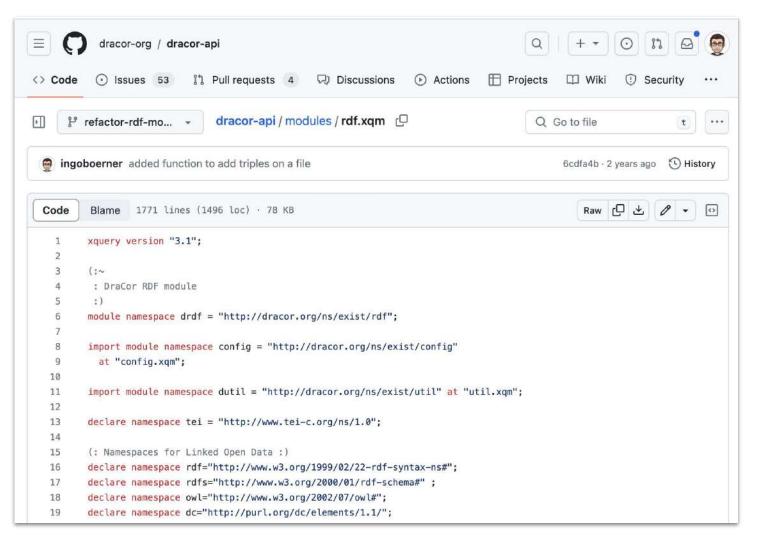
- Subclass of:¶
- E7 Activity
- Superclass of:
- E14 Condition Assessment
- E15 Identifier Assignment
- E16 Measurement¶
- E17 Type Assignment
- Scope note:

This class comprises the actions of making assertions about one property of an object or any single relation between two items or concepts. The type of the property asserted to hold between two items or concepts can be described by the property *P177 assigned property type*: E55 Type.

• Examples:

- the examination of MS Sinai Greek 418 by Nicholas Pickwoad in November 2003 (Honey & Pickwoad, 2010)
- the assessment of the current ownership of Martin Doerr's silver cup in February 1997
 (fictitious)
- In First Order Logic: \P $E13(x) \Rightarrow E7(x)\P$

Erin Canning hat gelöscht:



RDF module of the DraCor API [Link]



Resources

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⊞ References

≡ Presentations

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≡ Tutorials

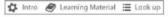
⊞ Critics

⊞ Publications

⊞ Mappings

I Important Theories

■ Related Activities



⟨⟨ Go to the CIDOC CRM website |
 ⟨⟨ Continue |
 ⟨ Continu

Login for editing

Versions

In this section you can find versions of the CIDOC CRM family models and related information.

▶ Read more about the columns definition of the table

| Version | Release Date | Available Documents | Status | CIDOC-CRM Compatible Version |
|----------------------------------|----------------|----------------------------------|--------|------------------------------|
| Version 0.9.3 | February 2023 | LRMoo v0.9.3 (draft for WWR).pdf | Draft | Version 7.1.2 |
| Version 0.9 | January 2023 | LRMoo v0.9 | Draft | Version 7.1.2 |
| LRMoo (f.k.a. FRBRoo) v.0.7 | June 2021 | d (.pdf), (docx) (docx) | Draft | version 7.1.1 |
| LRMoo (f.k.a. FRBRoo) v.0.6 | February 2020 | (.pdf), (doc) | Draft | version 6.2.7 |
| FRBRoo v. 3.0 | October 2017 | d (.pdf), ☐ (.docx) | Draft | version 6.2.7 |
| FRBRoo v. 2.4 (approved by IFLA) | November 2015 | ⓓ (.pdf), ඕ (.docx), ☐ (.rdf) | Stable | |
| FRBRoo v. 2.3 | September 2015 | d (.pdf), (docx) | Draft | |
| FRBRoo v. 2.2 | April 2015 | (.pdf), (.docx) | Draft | |
| FRBRoo v. 2.1 | February 2015 | (.pdf), (.docx), (.rdf) | Stable | |

frbroo: F38 Character

F38 Character

Subclass of: E28 Conceptual Object

Scope note: This class comprises fictional or iconographic individuals or groups of individuals (including

families) appearing in works in a way relevant as subjects. Characters may be purely fictitious or based on real persons or groups, but as characters they may exhibit properties that would be inconsistent with a real person or group. Rather than merging characters with real persons, they

should be described as disjoint, but related entities.

Examples: Harry Potter [in J.K. Rowling's series of novels and the films based on them]

Sinuhe the Egyptian [in Mika Waltari's novel]

The Knights of the Round Table [in fiction]

Properties: <u>R57</u> is based on (is basis for): <u>E39</u> Actor

R58 has fictional member (is fictional member of): F38 Character

F38 in FRBRoo v. 2.4 (https://www.cidoc-crm.org/frbroo/fm_releases)

frbroo: R57 is based on

Scope note:

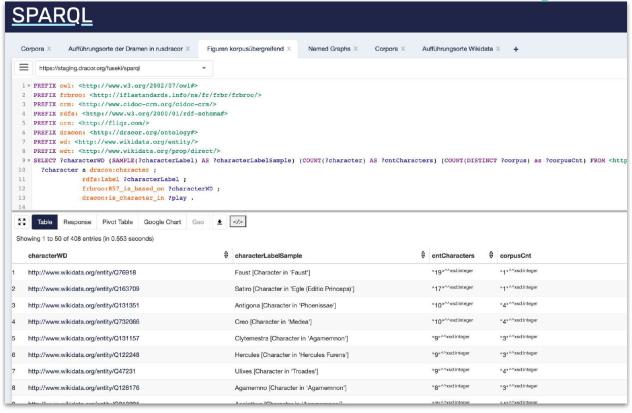
This property associates an instance of F38 Character with an instance of E39 Actor that the character is motivated by or is intended to represent. An instance of F38 Character may be based on a combination of features taken from several actors. This property is a shortcut of the more fully developed path from E28 Conceptual Object, restricted to F38 Character, through the inverse of P94 has created (was created by), E65 Creation P17 was motivated by (motivated) to E1 CRM Entity restricted to E39 Actor.

Examples:

The Character 'Sinuhe' (F38) in Mika Waltari's 'Sinuhe the Egyptian: A Novel' R57 is based on Sinuhe (E21) (documented in the autobiographic narrative in fragments carried by The Ramesside Papyrus, Pap. Berlin 10499, Pap. Berlin 3022, The Amherst fragments (m-q) and other Egyptian sources)

The Character 'Alexander' (F38) in Mary Renault's 'Fire from Heaven' R57 is based on Alexander the Great of Macedon (356-323) (E21)

SPARQL Characters across Corpora





| character | rWD | | |
|-----------|-----|--|--|
| | | | |
| | | | |

http://www.wikidata.org/entity/Q76918

http://www.wikidata.org/entity/Q163709

http://www.wikidata.org/entity/Q131351

http://www.wikidata.org/entity/Q732066

http://www.wikidata.org/entity/Q131157

http://www.wikidata.org/entity/Q122248

http://www.wikidata.org/entity/Q47231

http://www.wikidata.org/entity/Q128176

characterLabelSample

Faust [Character in 'Faust']

Creo [Character in 'Medea']

Ulixes [Character in 'Troades']

Intro to DraCor and LOD: <a href="https://github.com/dracor-org/dracor-notebooks/blob/lod-intro/

Satiro [Character in 'Egle (Editio Princeps)']

Clytemestra [Character in 'Agamemnon']

Hercules [Character in 'Hercules Furens']

Agamemno [Character in 'Agamemnon']

Antigona [Character in 'Phoenissae']

cntCharacters

"19"^^xsd:integer

"17"^^xsd:integer

"10"^^xsd:integer

"10"^^xsd:integer

"Q"^^xsd:integer

"Q"^^xsd:integer

"Q"^^xsd:integer

"A"^^xsd:integer

#Z#^^xsd:integer

corpusCnt

"1"^^xsd:integer

"4"^^xsd:integer

"4"^^xsd:integer

"4"^^xsd:integer

"3"^^xsd:integer

"3"^^xsd:integer

"4"^^xsd:integer

"3"^^xsd:integer

II A II ^^xsd-integer

FRBR oo Functional Requirements for Bibliographic Records

Resources

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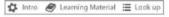
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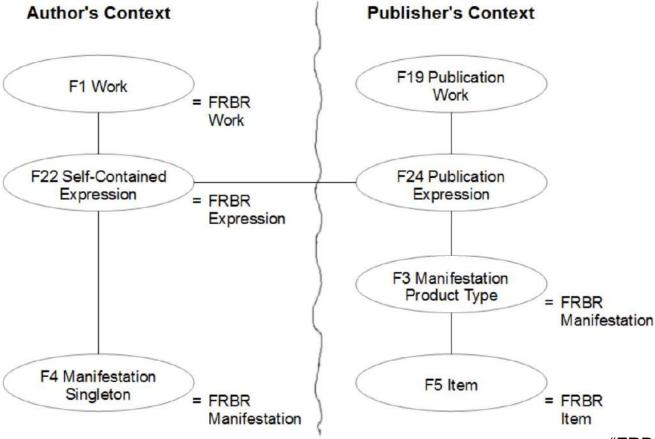
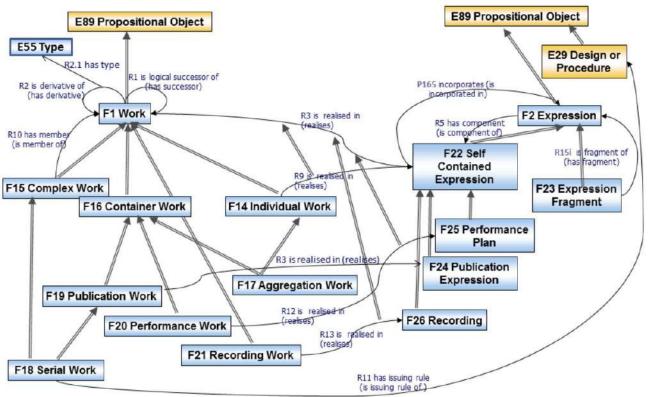


Figure 2

"FRBR Group1 Entities" in FRBRoo (in FRBRoo v. 2.4)

Work and Expression, static view



Subclasses of Work and Expression (FRBRoo v. 2.4)

Figure 6

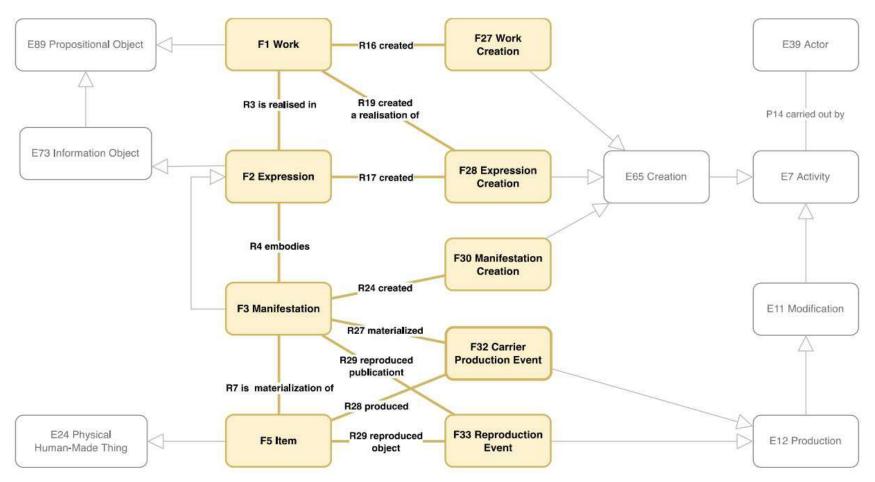
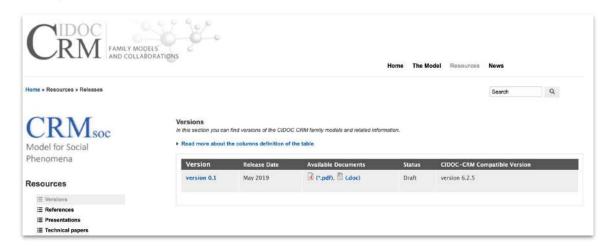


Figure 1. Main LRM₀₀ classes and properties and their connections to CIDOC CRM classes

(LRMoo Draft v0.9.3)

... and the Characters (in LRMoo)?

| D. FRBRoo CLASSES AND PROPERTIES TRANSFERRED TO CRMsoc | | | | |
|--|----|--|--|--|
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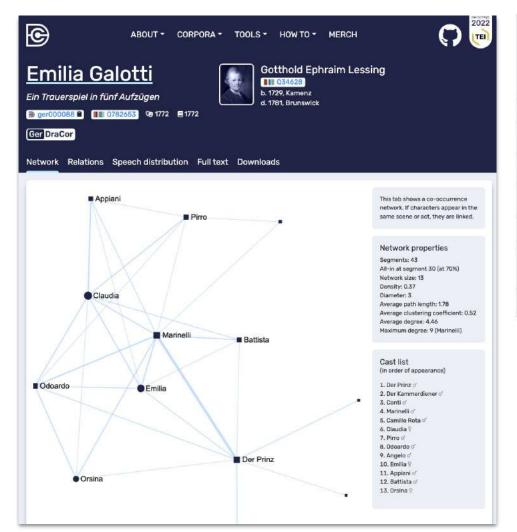


CRMsoc (still a draft only)



... and now ???

Some modeling proposals and a lot of questions



| No. | Feature | Ch8 | character_node_closeness |
|-----|----------------------------|------|-------------------------------|
| | | Ch9 | character_node_eigenvector |
| Ch1 | character_id | Ch10 | character_node_weighted_degre |
| Ch2 | character_name | | - |
| | | Ch11 | character num of segments |
| Ch3 | character_is_group | | |
| Ch4 | character_gender | Ch12 | character_num_of_sp |
| Ch5 | character_wikidata_id | Ch13 | character_num_of_word_tokens |
| Ch6 | character_node_betweenness | Ch14 | character_roles |
| Ch7 | character_node_degree | Ch15 | character_spoken_text |

Spoken Text via API:

https://dracor.org/api/corpora/ger/play/lessing-emilia-galotti/spoken-text-by-character

<ParticDesc>

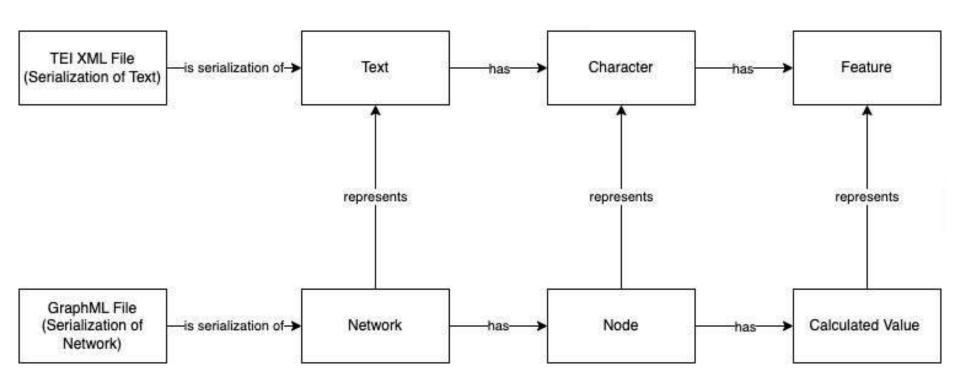
https://github.com/dracor-org/gerdracor/blob/main/tei/lessing-emilia-galotti.xml#L52-L99

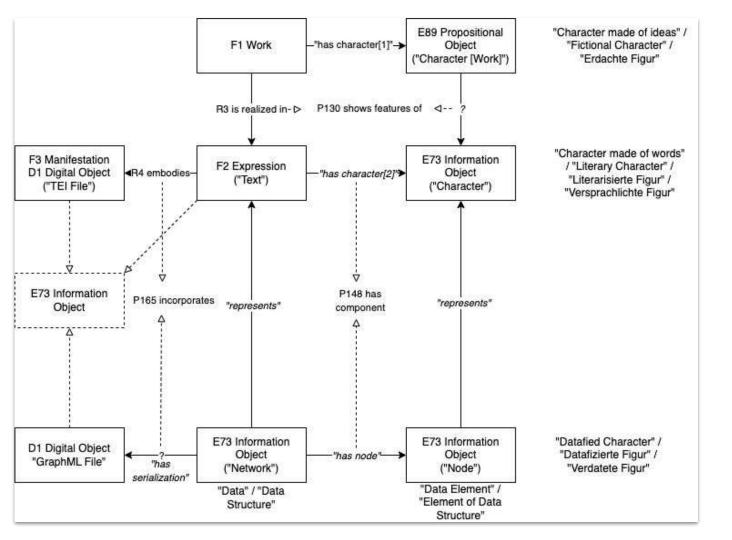
<CastList>

https://github.com/dracor-org/gerdracor/blob/main/tei/lessing-emilia-galotti.xml#L139-L159

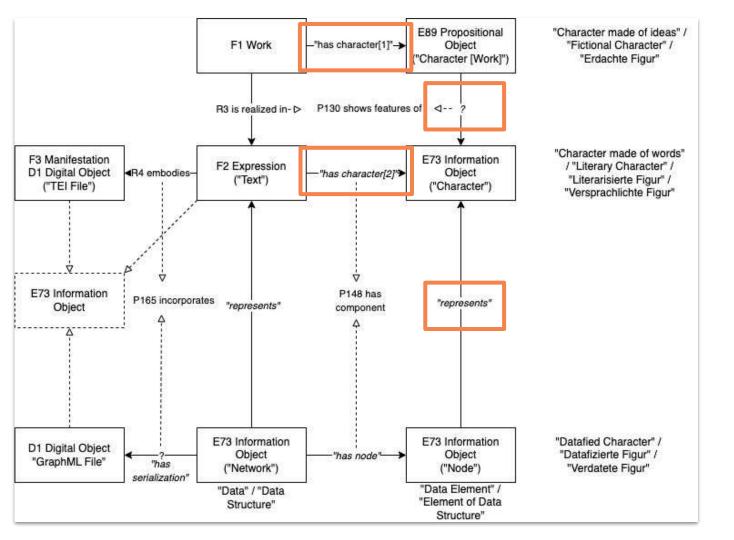
The case of DraCor: "Characters" vs. "Nodes" in a Network



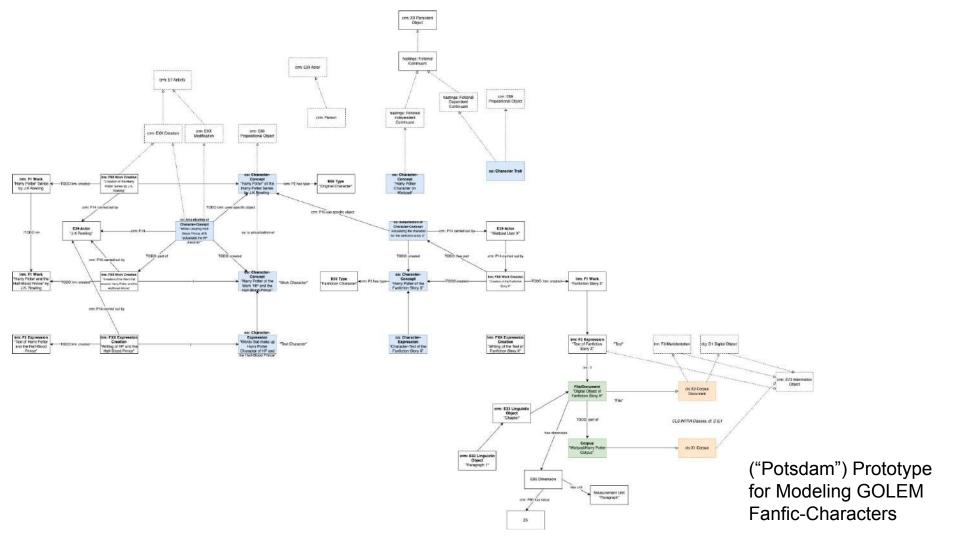


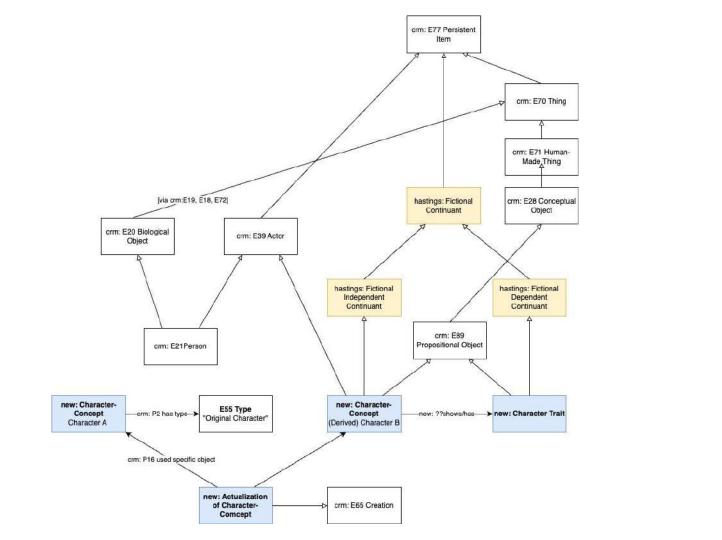


DraCor Characters and Nodes in CIDOC/LRMoo



DraCor Characters and Nodes in CIDOC/LRMoo







THANK YOU

ingo.boerner@uni-potsdam.de