



Unterstützung  
eines nachhaltigen  
Forschungsdatenmanagements  
durch den Basisdienst  
Terminology Services 4 NFDI (TS4NFDI)

Roman Baum, Syphax Bouazzouni, Jan Fillies, Naouel Karam, Oliver Koepler, Pooya Oladazimi, Julia Sasse

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# Terminology Services der NFDI

Basisdienst: TS4NFDI

Anwendung & Integration von Terminologiediensten

# Terminology Services der NFDI

Terminologien existieren in diversen NFDI Konsortien

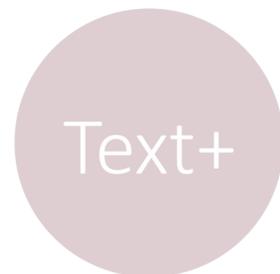
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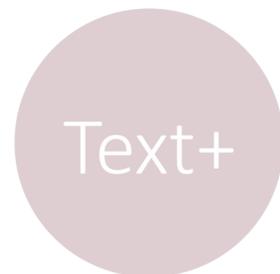
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- viele NFDI Konsortien bieten Terminologien in ihren domänenspezifischen Gebiet
- basieren auf Ontology Lookup Service (OLS)



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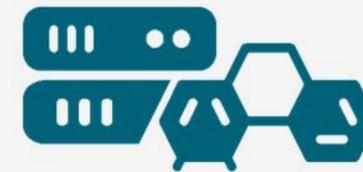
## NFDI4Chem - Terminology Service

- Zugang zu einer Sammlung von Ontologien, die für die Chemie Community relevant sind



Search for ontology, term, properties and individuals

Search



### WHAT IS THIS ?

The Terminology Service is a repository for chemistry ontologies. It is a central point of access to the latest versions of these ontologies providing comprehensive information about their scope, application and curators. The ontologies have been selected by a set of **quality criteria** defining their feasibility to describe chemistry research activities and research data in an open and FAIR manner.



### HOW TO SEARCH ?

You can search the Terminology Service by metadata, classes and properties of the ontologies to check if and where a class, term or concept is described. You can filter the result list by several criteria. Alternatively, you can first browse first a list of ontologies and then their classes or properties using the tree view.



### NOT A HUMAN ?

The Terminology Service is available in particular for use by other services. Data repositories or electronic lab notebooks can use the comprehensive API of the Terminology Service to retrieve and provide ontology terms in their user interfaces enabling semantic data annotation. Please visit the **documentation** to find and how to use it for you.

access: <https://t.ly/WBlCq>



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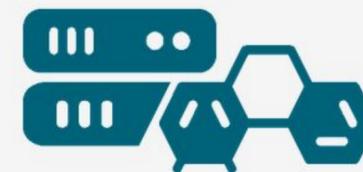
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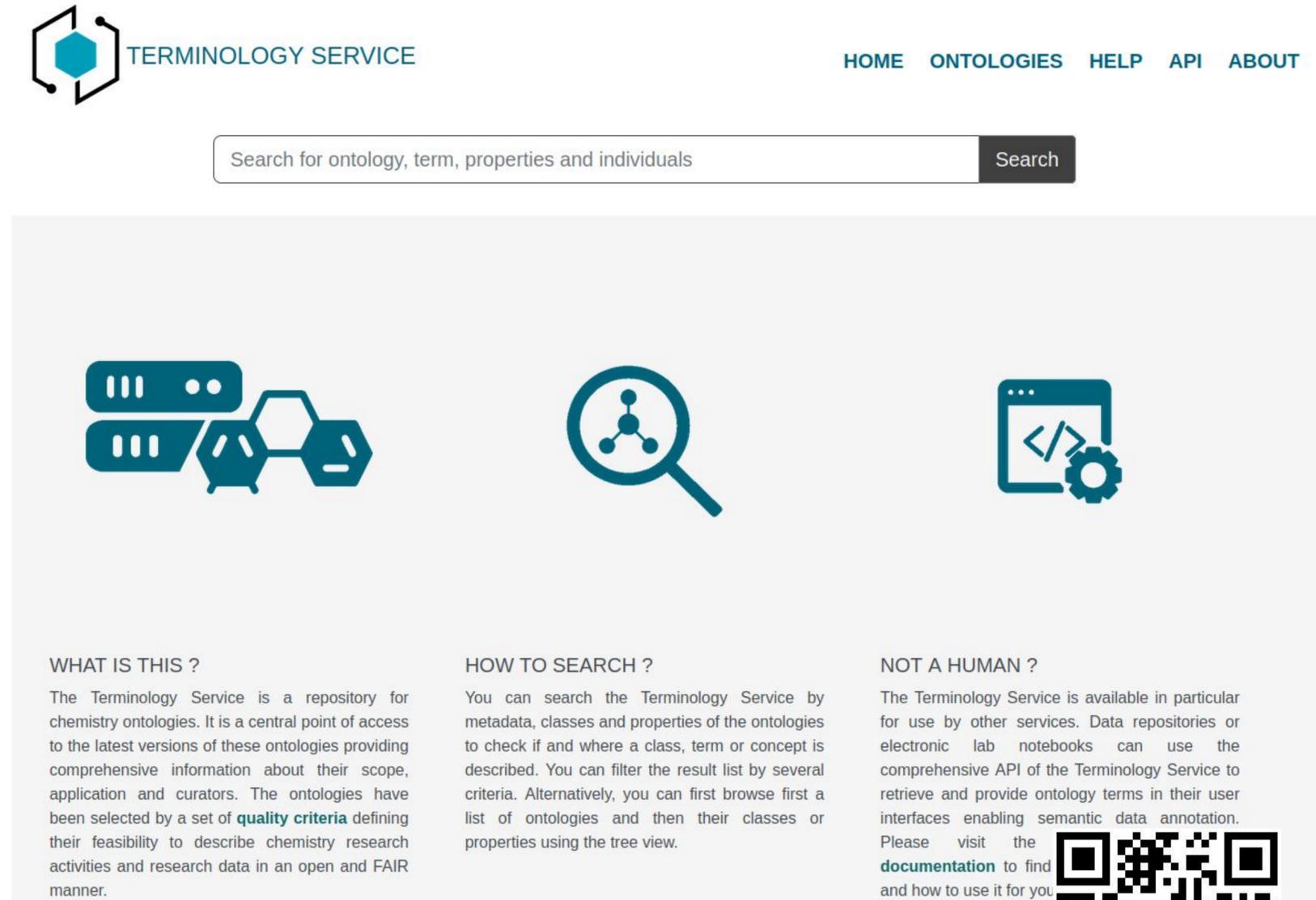
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- Vergleich & Analyse mehrerer Ontologien für Kuratierungsaufgaben
  - offers an unified view of issues from the original ontology repository



The screenshot shows the website for the Terminology Service. At the top left is the logo, a blue hexagon with a white 'T' inside, followed by the text 'TERMINOLOGY SERVICE'. To the right is a navigation menu with links: 'HOME', 'ONTOLOGIES', 'HELP', 'API', and 'ABOUT'. Below the navigation is a search bar with the placeholder text 'Search for ontology, term, properties and individuals' and a 'Search' button. The main content area features three icons: a database icon, a magnifying glass over a network diagram, and a code editor icon. Below these icons are three columns of text: 'WHAT IS THIS?', 'HOW TO SEARCH?', and 'NOT A HUMAN?'. The 'WHAT IS THIS?' section describes the service as a repository for chemistry ontologies. The 'HOW TO SEARCH?' section explains how to search by metadata, classes, and properties, and how to filter results. The 'NOT A HUMAN?' section mentions that the service is available for use by other services and provides a link to the documentation.

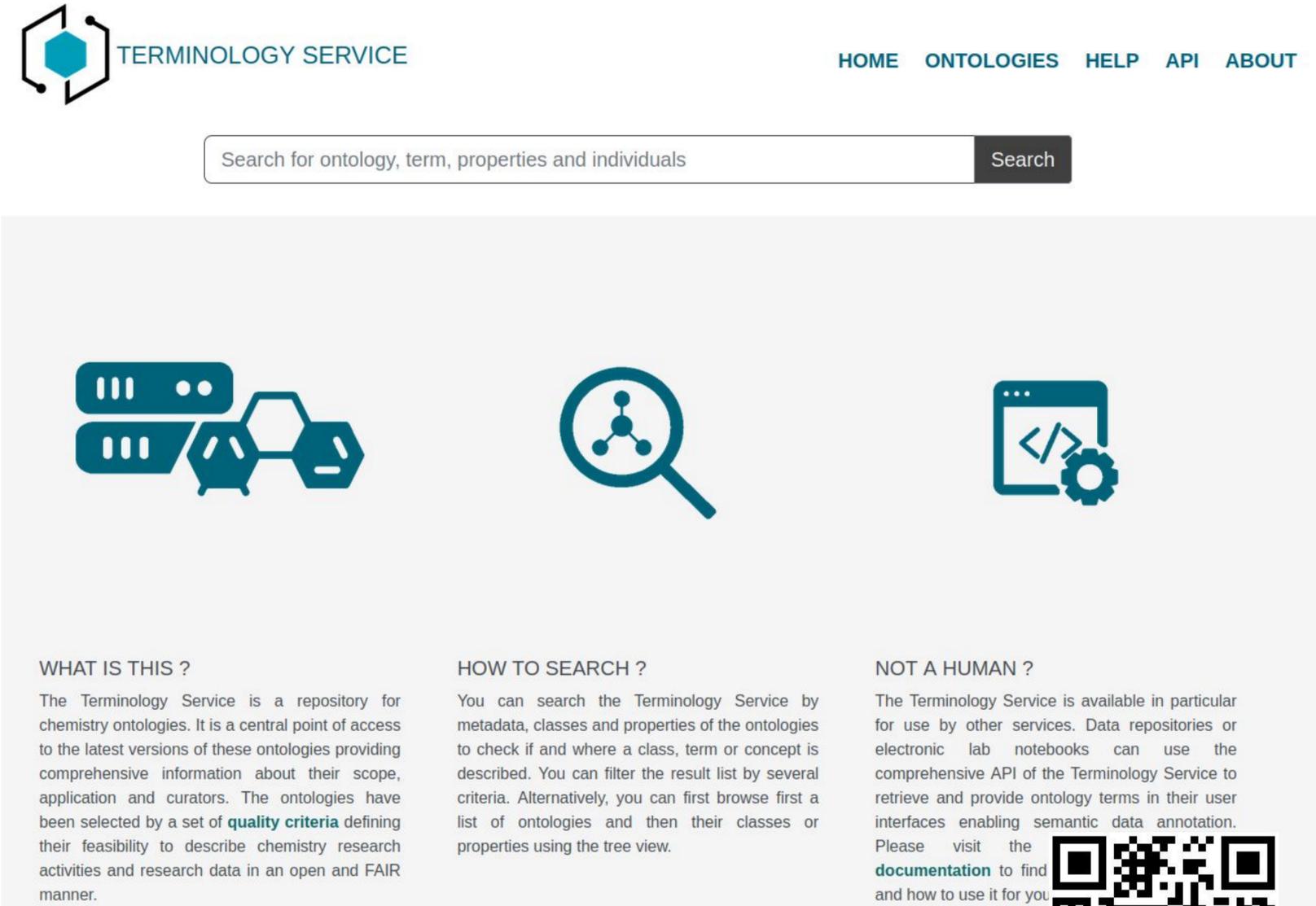
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- kann auch SKOS-Vokabularien indizieren und anzeigen



TERMINOLOGY SERVICE

HOME ONTOLOGIES HELP API ABOUT

Search for ontology, term, properties and individuals Search

**WHAT IS THIS ?**  
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**HOW TO SEARCH ?**  
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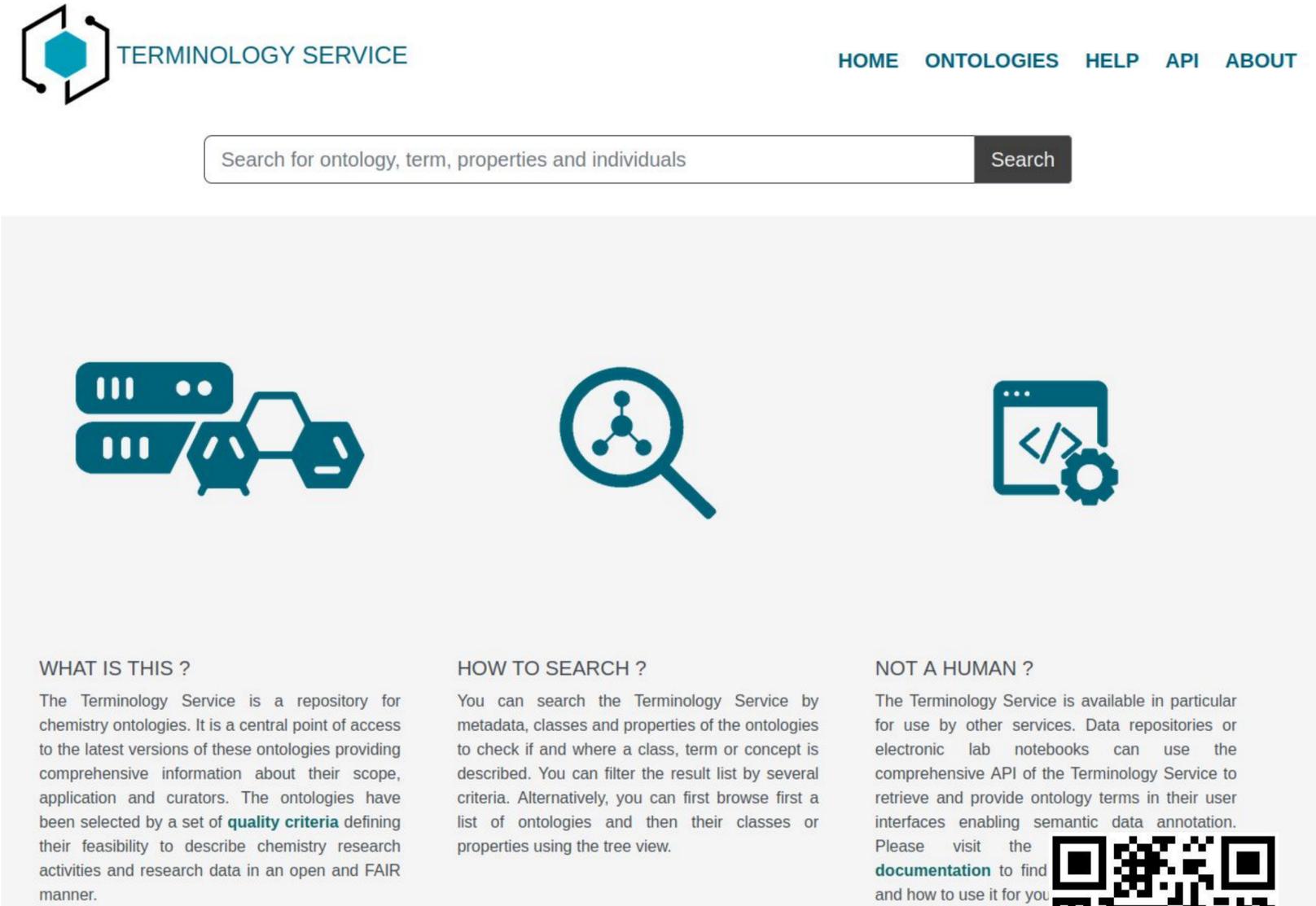
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- Vergleich & Analyse mehrerer Ontologien für Kuratierungsaufgaben
  - offers an unified view of issues from the original ontology repository
- kann auch SKOS-Vokabularien indizieren und anzeigen
- eine umfangreiche API zum Abruf aller Daten



The screenshot shows the website for the Terminology Service. At the top left is the logo 'TERMINOLOGY SERVICE' with a blue hexagonal icon. To the right is a navigation menu with links: HOME, ONTOLOGIES, HELP, API, ABOUT. Below the navigation is a search bar with the placeholder text 'Search for ontology, term, properties and individuals' and a 'Search' button. The main content area features three columns of information, each with an icon and a heading:

- WHAT IS THIS ?**: Accompanied by an icon of a chemical structure and a list. Text: 'The Terminology Service is a repository for chemistry ontologies. It is a central point of access to the latest versions of these ontologies providing comprehensive information about their scope, application and curators. The ontologies have been selected by a set of **quality criteria** defining their feasibility to describe chemistry research activities and research data in an open and FAIR manner.'
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- NOT A HUMAN ?**: Accompanied by a computer monitor icon with code symbols. Text: 'The Terminology Service is available in particular for use by other services. Data repositories or electronic lab notebooks can use the comprehensive API of the Terminology Service to retrieve and provide ontology terms in their user interfaces enabling semantic data annotation. Please visit the **documentation** to find and how to use it for you.'

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# Terminology Services der NFDI

## NFDI4Health - SemLookP

### Welcome to the Terminology Service SemLookP

The following input field provides an autocomplete functionality. It could handle for example a term (e.g. "diabetes"), a short form (e.g. "GO:0098743") and even an IRI (e.g. <http://snomed.info/id/423701002>)

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Looking for a certain terminology?

[Please use our terminology overview](#)

You could also use one of our examples: [diabetes](#), [GO:0098743](#)

### Data Content

Updated 11.9.2023, 14:54:20

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- 4.580.761 terms
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- 578.859 individuals

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**access: <https://t.ly/t5W9e>**

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## ● Semantic **Lookup** Platform

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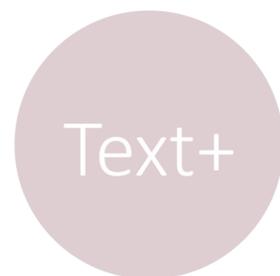


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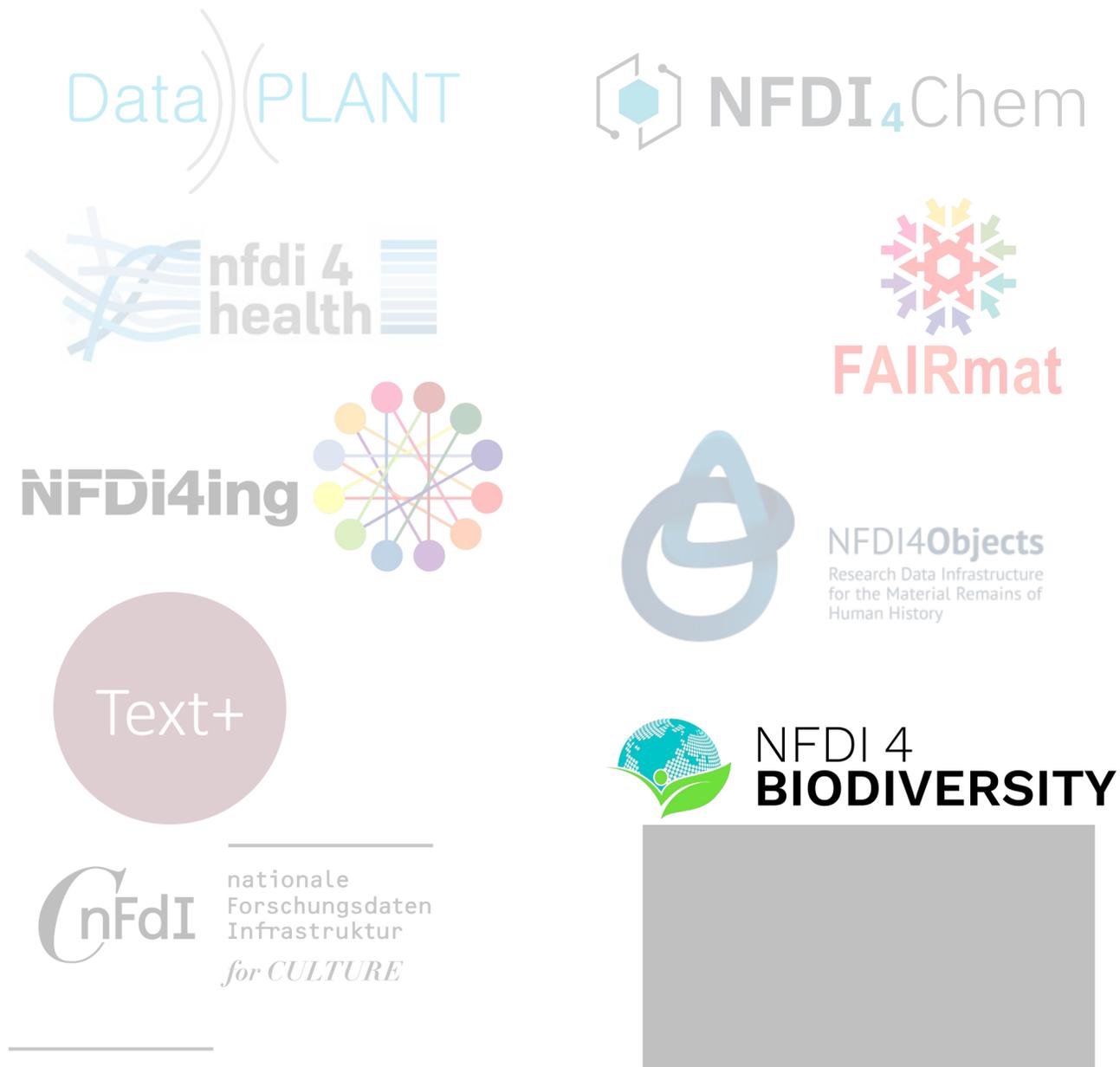
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- Eigenentwicklung GFBio Terminology Service (first version)
- **BiodivPortal** basiert auf **OntoPortal**

# Terminology Services der NFDI

## NFDI4Biodiversity - BiodivPortal

- provides access to a **collection of ontologies** relevant to the **biodiversity** community

The screenshot shows the BiodivPortal website interface. At the top, there is a navigation bar with the BiodivPortal logo and links for Browse, Search, Mappings, Recommender, Annotator, Projects, and Landscape. There are also Login and Support buttons. Below the navigation bar, a welcome message reads: "Welcome to BiodivPortal, a vocabulary and ontology repository for biodiversity". The main content area is divided into several sections:

- Search for a class:** A search box with the placeholder text "Search for a term, e.g. honey bee" and a search icon. Below it is a link for "Advanced Search".
- Find an ontology:** A search box with the placeholder text "Start typing ontology name, then choose from list" and a search icon. Below it is a "Browse Ontologies" button.
- Ontology Visits (December 2023):** A line graph showing visits over time, with a "More" link below it.
- BiodivPortal Statistics:** A table showing the following data:

Ontologies	30
Classes	337,332
Individuals	26,295
Projects	1
Users	8
- FAIR Scores:** A section with a "beta" label, a question mark icon, and a code icon. It displays statistics: Average 236.32 (49%), Min 204 (42.67%), Max 265 (55.43%), and Median 240 (50.2%).

access: <https://t.ly/-mVkW>



# Terminology Services der NFDI

## NFDI4Biodiversity - BiodivPortal

- provides access to a collection of ontologies relevant to the biodiversity community
- provides **faceted search** inside ontologies, tree and lists views of **concepts, properties** and **individuals**

The screenshot shows the BiodivPortal interface. At the top, there is a navigation bar with the BiodivPortal logo and links for Browse, Search, Mappings, Recommender, Annotator, Projects, and Landscape. A 'Login' button and 'Support' link are also present. The main heading is 'Browse'. Below it, there is a search bar and a filter section. The filter section includes 'Entry Type' (Ontology (30) selected, Ontology View (0)), 'Uploaded in the Last' (dropdown menu), and 'Category' (anatomical (4), biology (12), chemistry (1), environmental (2), general (1)). The main content area displays a list of ontologies with their names, descriptions, upload dates, and statistics (classes, FAIR score, instances). The ontologies listed are: ABCD Base Ontology (ABCD), AMMOD IOC World Bird List (IOC), AMMOD Metabarcoding Ontology (BIOBANK), and Animal Trait Ontology for Livestock (ATOL).

Ontology Name	Description	Upload Date	Classes	FAIR score	Instances
ABCD Base Ontology (ABCD)	The base ontology of the ABCD Standard.	6/24/23	65	222	79
AMMOD IOC World Bird List (IOC)	The ontology used by the Bioacoustic team of the AMMOD project	8/4/23	13,337	206	
AMMOD Metabarcoding Ontology (BIOBANK)	The ontology used by the Metabarcoding team of the AMMOD project	8/4/23	2,328	204	
Animal Trait Ontology for Livestock (ATOL)	ATOL (Animal Trait Ontology for Livestock) is an ontology of characteristics defining		2,352		

access: <https://t.ly/-mVkW>



# Terminology Services der NFDI

## NFDI4Biodiversity - BiodivPortal

- provides access to a collection of ontologies relevant to the biodiversity community
- provides faceted search inside ontologies, tree and lists views of concepts, properties and individuals
- can also index and display **SKOS vocabularies** and specific SKOS constructs like **collections**

The screenshot displays the BiodivPortal interface for the 'SeaDataNet device categories' ontology. The page title is 'SeaDataNet device categories' with a sub-header 'Last updated: January 18, 2024'. The navigation bar includes 'BiodivPortal' and links for 'Browse', 'Search', 'Mappings', 'Recommender', 'Annotator', 'Projects', and 'Landscape'. The main content area is divided into tabs: 'Summary', 'Concepts', 'Properties', 'Notes', 'Mappings', 'Schemes', 'Collections', and 'Widgets'. The 'Concepts' tab is active, showing a 'Jump to' search box and a 'Filter' dropdown. A 'Collections' sidebar is visible on the left, with a search box and a list of options including 'DCAT Themes for Linked Data Representation', 'SeaDataNet device categories', 'SeaDataNet device category types', 'SeaDataNet keyword types', and 'SensorML Classification Section Terms'. The main content area shows a 'Details' view for the concept 'Instruments', with fields for ID, Preferred Name, Synonyms, Definitions, Obsolete status, Member of, and Type. The 'Definitions' field contains the text: 'Distinct sampling or measuring devices that may be identified in the real world in terms of manufacturer and model number.' The 'Member of' field contains 'DCAT Themes for Linked Data Representation of the SeaDataNet EDMED Catalogue'. The 'Type' field contains 'http://www.w3.org/2004/02/skos/core#Concept'. Below the details, there is a list of related concepts: 'ice thickness profilers', 'pH sensors', and 'aerosol samplers'.

access: <https://t.ly/-mVkW>



# Terminology Services der NFDI

## NFDI4Biodiversity - BiodivPortal

- provides access to a collection of ontologies relevant to the biodiversity community
- provides faceted search inside ontologies, tree and lists views of concepts, properties and individuals
- can also index and display SKOS vocabularies and specific SKOS constructs like collections
- provides terminology **recommendation** and **text annotation** services

**BiodivPortal** Browse Search Mappings Recommender Annotator Projects Landscape Login Support ▾

### Ontology Recommender

Birds have important ecological functions which are essential for the provision of **ecosystem** services such as **pollination**, seed dispersal and pest control. In the tropics, **habitat** losses and **habitat** degradation, in particular in forests, are causing rapid declines in **bird species**, which in turn may cause reductions in **ecosystem** processes, services and benefits. In coffee agroforests, for example, reduced floristic **diversity** leads to reduced control of **insect** populations by birds and thus to **crop** losses. In disturbed forests, altered seed dispersal patterns, for instance due to declining populations of frugivores, may influence **succession**, cause regime shifts in **plant** communities and thus modify **ecosystem** functioning. The **conservation** of birds is, therefore, essential to maintain **ecosystem** services delivery across a wide **range** of habitats including **human**-dominated habitats such as farmland, agroforests and rangeland.

Show advanced options >>

Edit Input

#### Recommended ontologies

POS. ▲	ONTOLOGY	FINAL SCORE	COVERAGE SCORE	ACCEPTANCE SCORE	DETAIL SCORE	SPECIALIZATION SCORE	ANNOTATIONS	HIGHLIGHT ANNOTATIONS
1	SWEET	56.3	72.3	0.0	9.9	100.0	17	<input checked="" type="checkbox"/>
2	ENVO	44.4	44.7	0.0	63.6	68.6	15	<input type="checkbox"/>
3	FLOPO	26.1	14.9	0.0	98.0	21.4	5	<input type="checkbox"/>
4	PATO	22.7	14.9	0.0	72.8	23.6	7	<input type="checkbox"/>

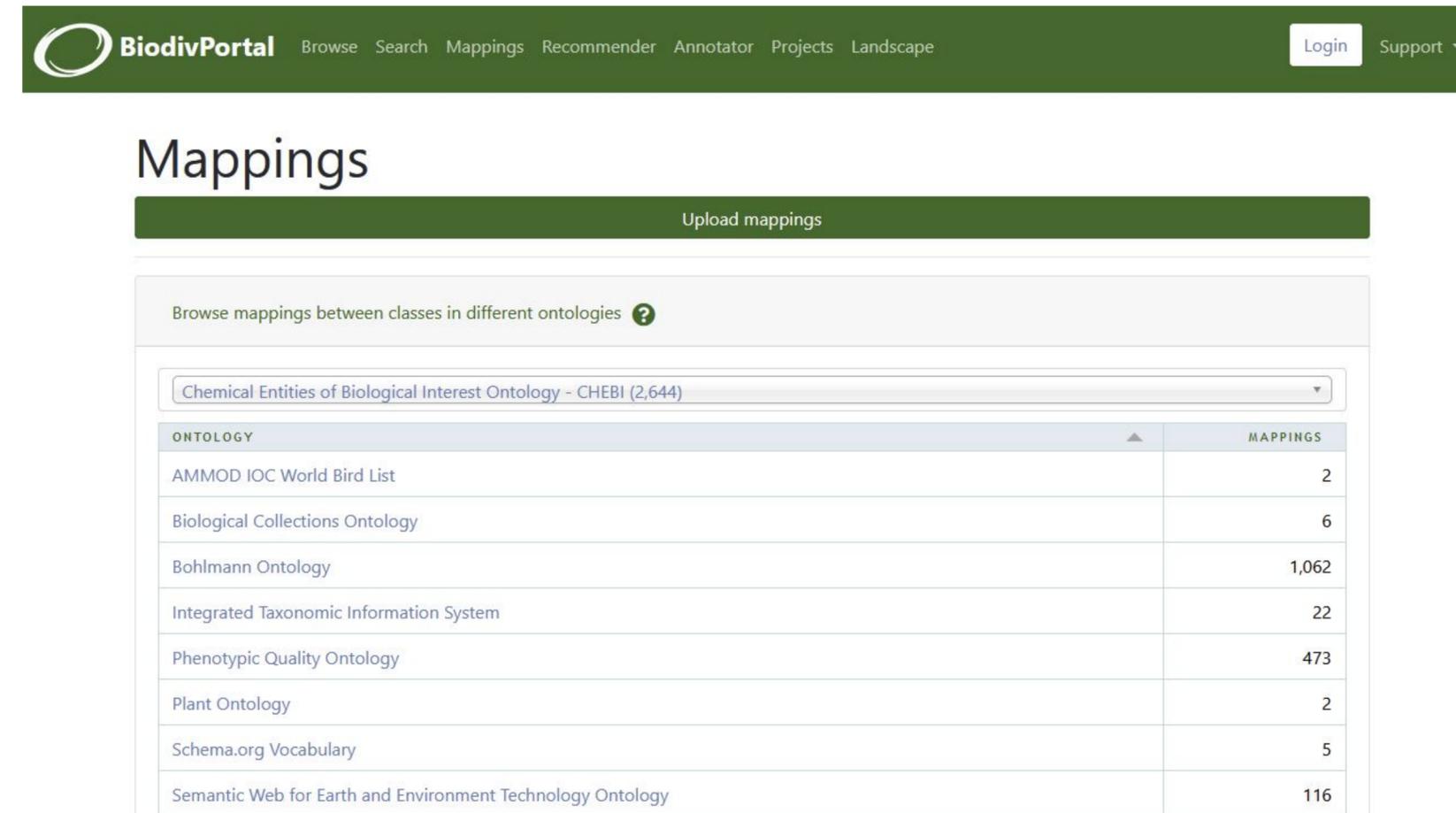
access: <https://t.ly/-mVkW>



# Terminology Services der NFDI

## NFDI4Biodiversity - BiodivPortal

- provides access to a collection of ontologies relevant to the biodiversity community
- provides faceted search inside ontologies, tree and lists views of concepts, properties and individuals
- can also index and display SKOS vocabularies and specific SKOS constructs like collections
- provides terminology recommendation and text annotation services
- computes **mappings automatically** and offers the possibility to upload **external mappings**



ONTOLOGY	MAPPINGS
AMMOD IOC World Bird List	2
Biological Collections Ontology	6
Bohlmann Ontology	1,062
Integrated Taxonomic Information System	22
Phenotypic Quality Ontology	473
Plant Ontology	2
Schema.org Vocabulary	5
Semantic Web for Earth and Environment Technology Ontology	116

access: <https://t.ly/-mVkw>



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- provides terminology recommendation and text annotation services
- computes mappings automatically and offers the possibility to upload external mappings
- a comprehensive **API** to retrieve all data

```
[ - {
  - administeredBy: [
    https://data.biodivportal.gfbio.dev/users/admin
  ],
  acronym: "THYSANOPTERA",
  name: "Thysanoptera Ontology",
  summaryOnly: false,
  flat: null,
  ontologyType: htt
  group: [ ],
  - hasDomain: [
    https://data.
  ],
  viewingRestrictio
  viewOf: null,
  views: [ ],
  @id: https://data
  @type: http://dat
  - links: {
    submissions:
    properties: h
    classes: http
    single_class:
    roots: https:
    schemes: http
    collections:
    xl_labels: ht
    instances: ht
    metrics: http
    reviews: http
    notes: https:
    groups: https:
    categories: h
    latest_submis
    projects: htt
    download: htt
    views: https:
    analytics: ht
    ui: http://bi
  - @context: {
    submission
    properties
    classes: h
```

### API Documentation

#### General Usage

This API is comprised of a set of resources (Ontologies, Classes, etc) and related endpoints (Search, Annotator, Recommender) connected together via links, much like webpages. We recommend that you try browsing the API using a web browser (Chrome and Firefox work very well while IE does not) before you start writing code. For more information, please see the documentation on [Media Types and Hypermedia Links](#) or view our [sample code](#), available in Java, Python, Ruby and other languages (please email [support@bioontology.org](mailto:support@bioontology.org) if you would like examples in another language).

#### Common Parameters

Parameter	Possible Values	Description
apikey	{your api key}	An API Key is required to access any API call. It can be provided in three ways: <ol style="list-style-type: none"><li>Using the <code>apikey</code> query string parameter</li><li>Providing an <code>Authorization</code> header: <code>Authorization: apikey token=your_apikey</code> (replace `your_apikey` with actual key)</li><li>When using a web browser to explore the API, if you provide your API Key once using method 1, it will be stored in a cookie for subsequent requests. You can override this by providing a different API Key in a call.</li></ol>
include	all {comma-separated list of attributes, EX: attr1,attr2}	By default, the API will show a subset of the available attributes for a given media type. This behavior can be overridden by providing <code>include=all</code> to show all attributes or <code>include=attr1,attr2</code> to show a specific subset. The API is optimized to return only the attributes you request to impact the performance of your call. The <code>include=all</code> option is more expensive. Use it sparingly.

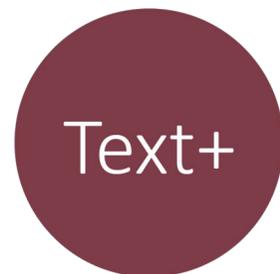


access: <https://t.ly/-mVkW>

# Terminology Services der NFDI

Terminologien existieren in diversen NFDI Konsortien

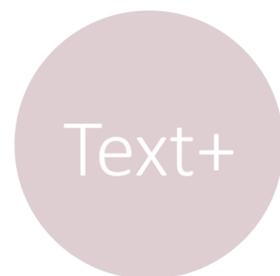
- viele NFDI Konsortien bieten Terminologien in ihren domänenspezifischen Gebiet



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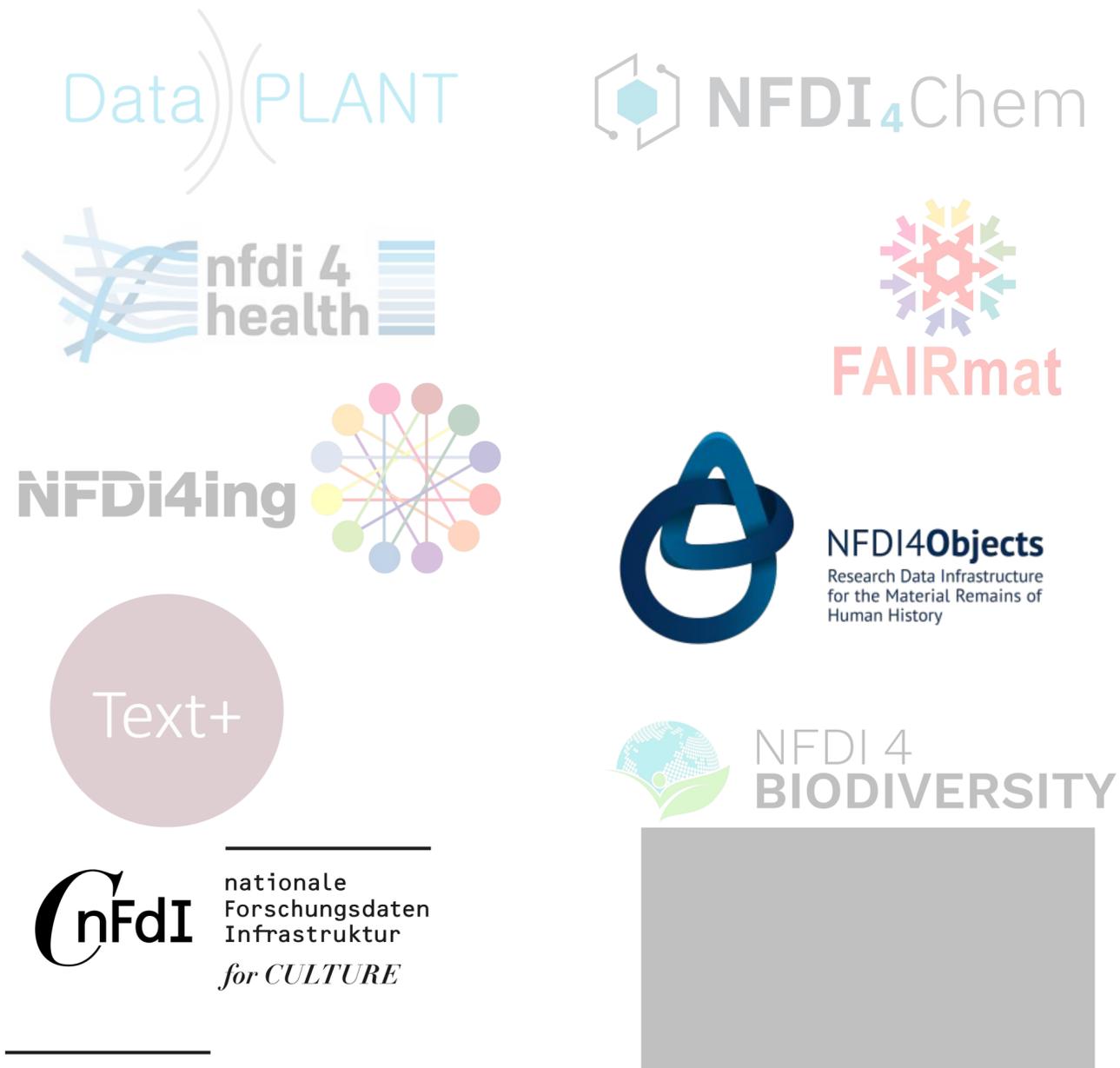
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- NFDI4Culture: e.g. Iconclass; Getty Vocabularies; GND



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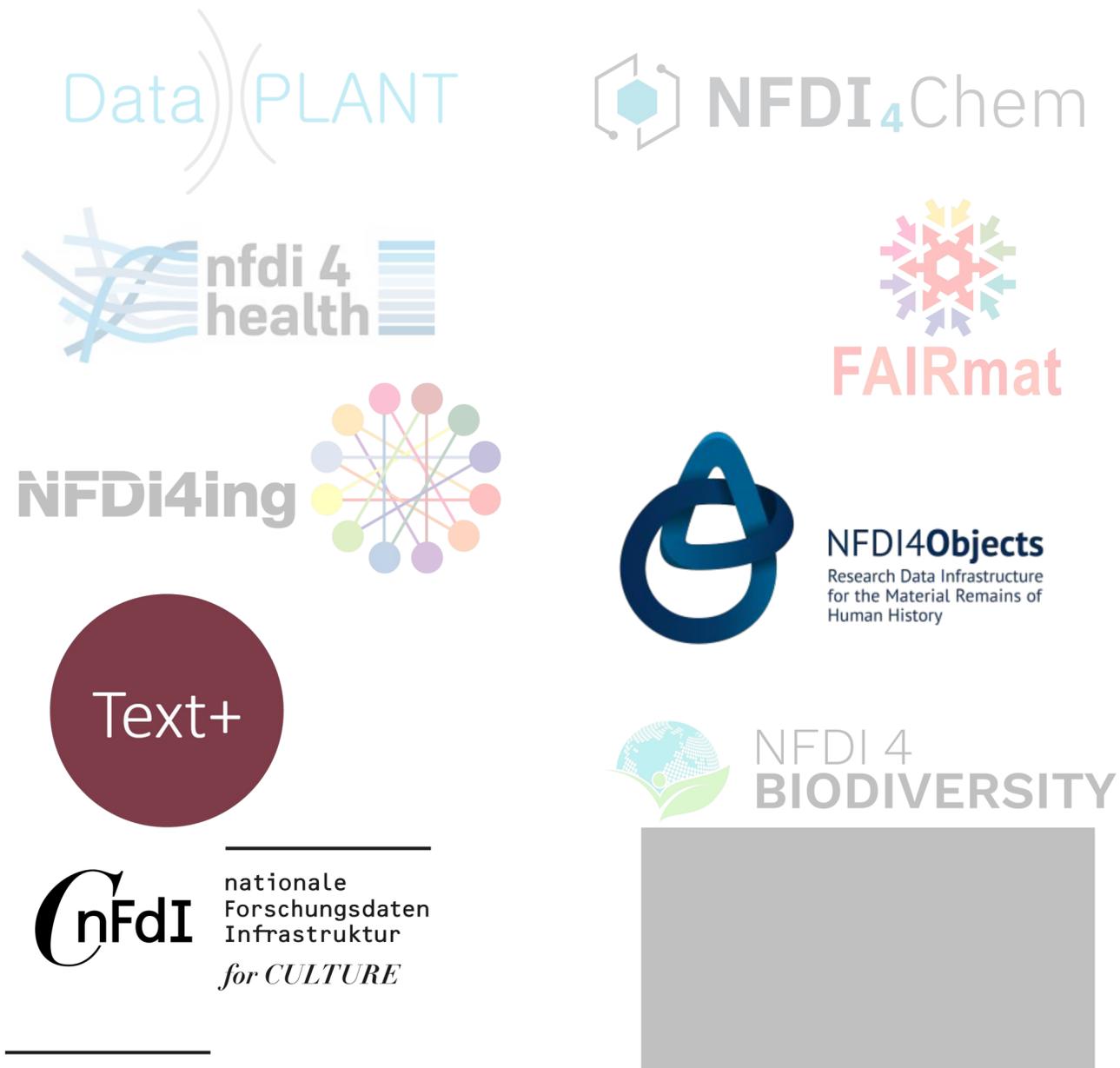
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- NFDI4Objects: e.g. CIDOC-CRM; LIDO; GND, Getty TGN; Iconclass

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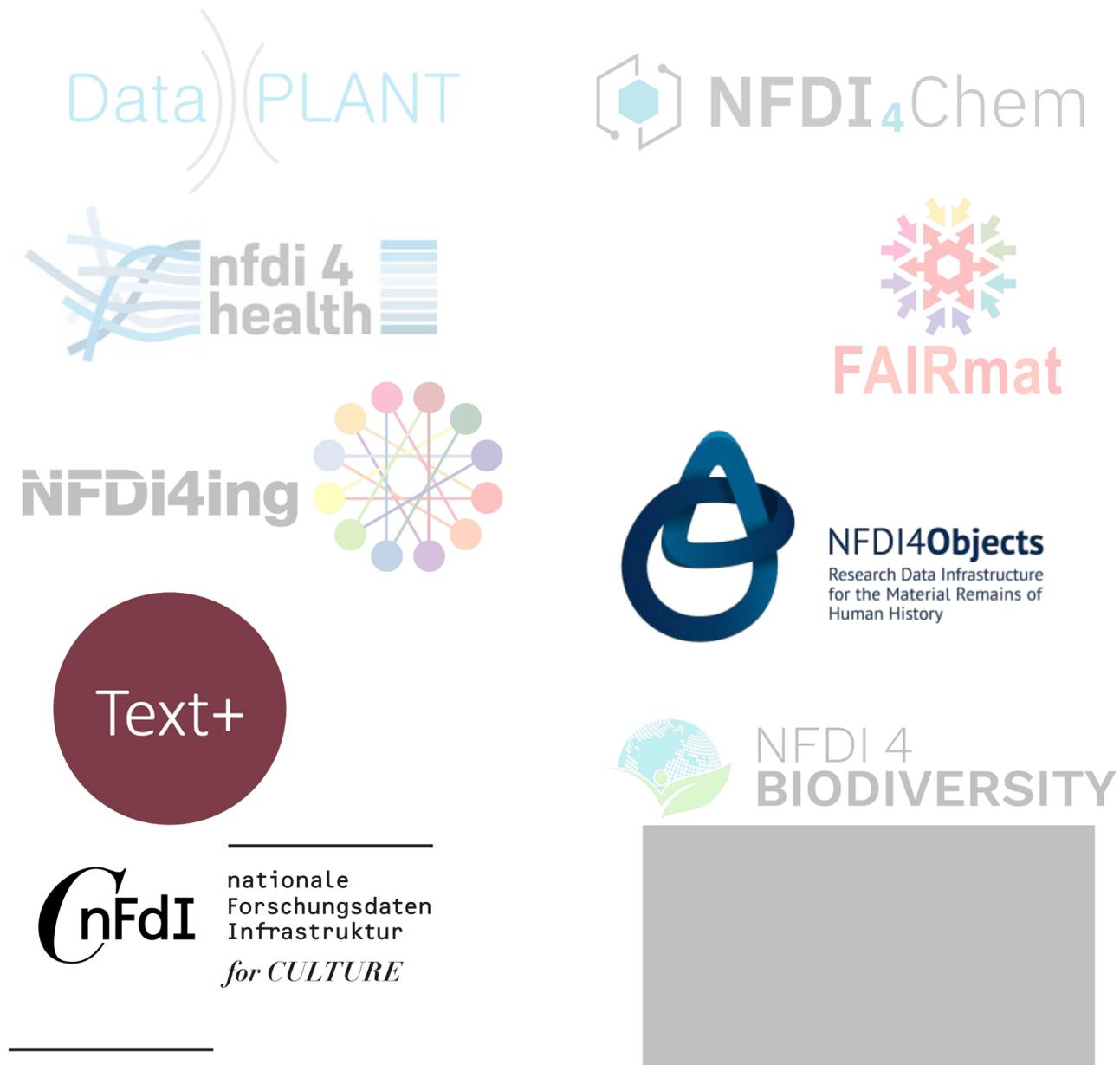
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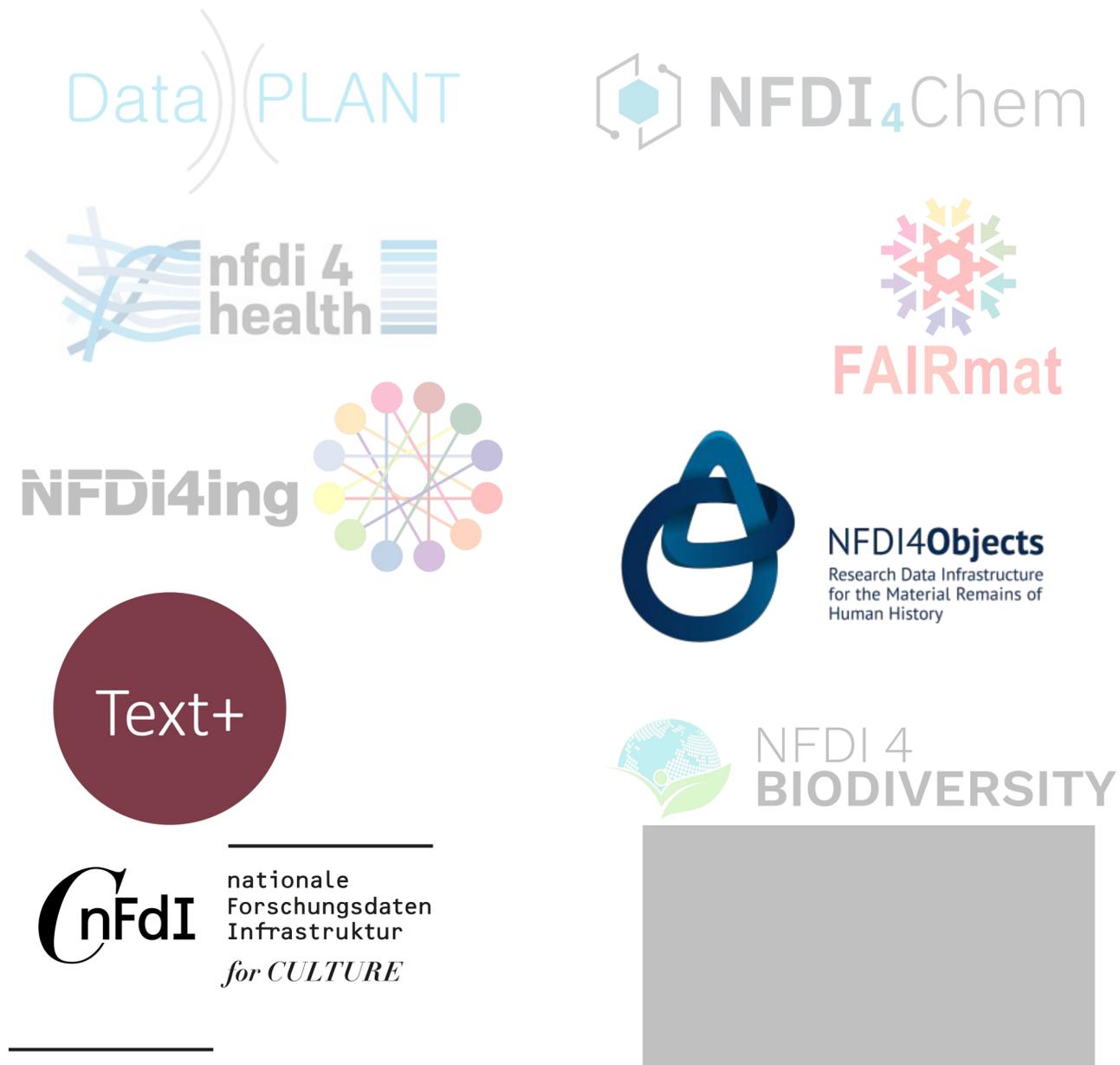
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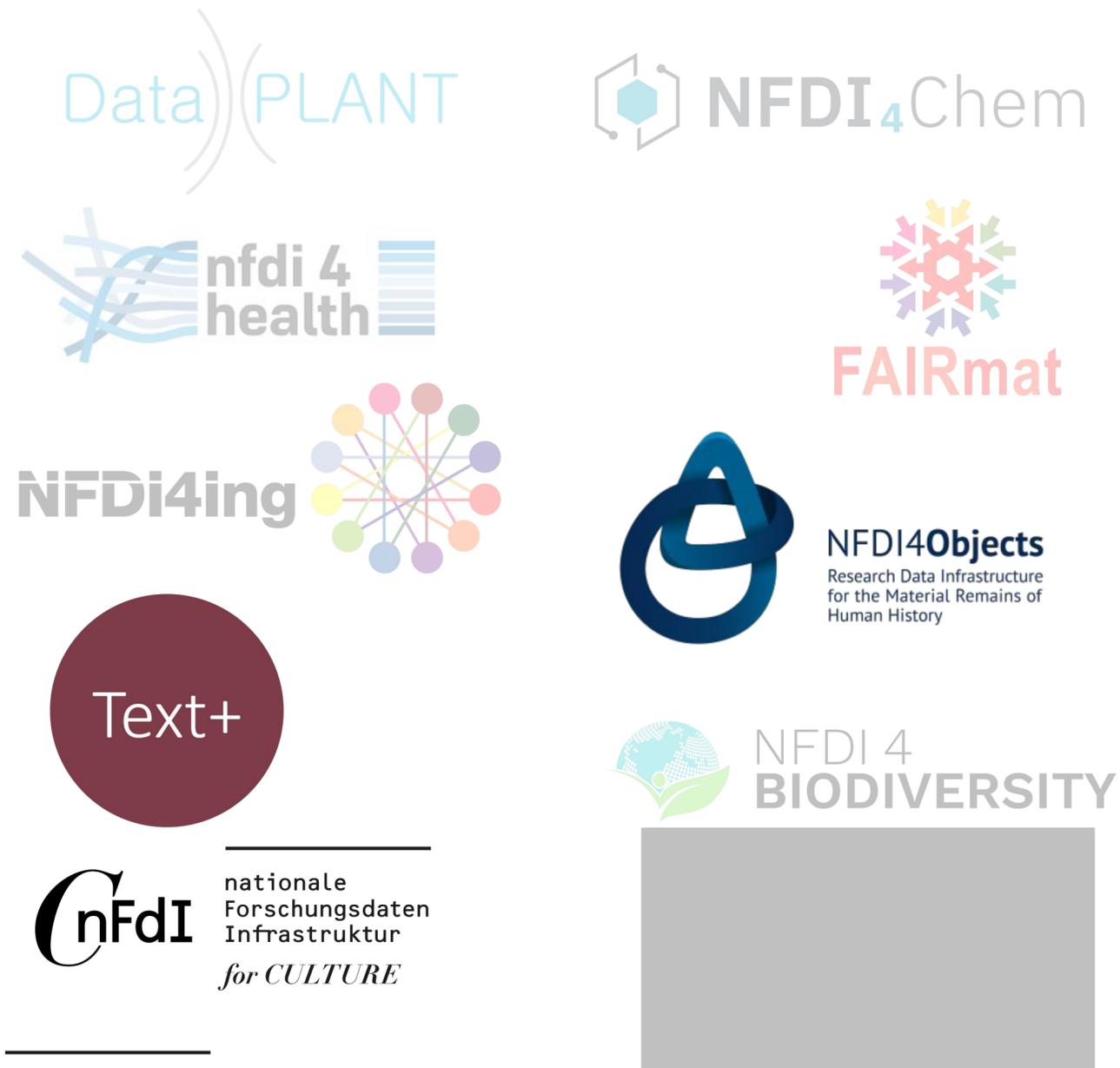
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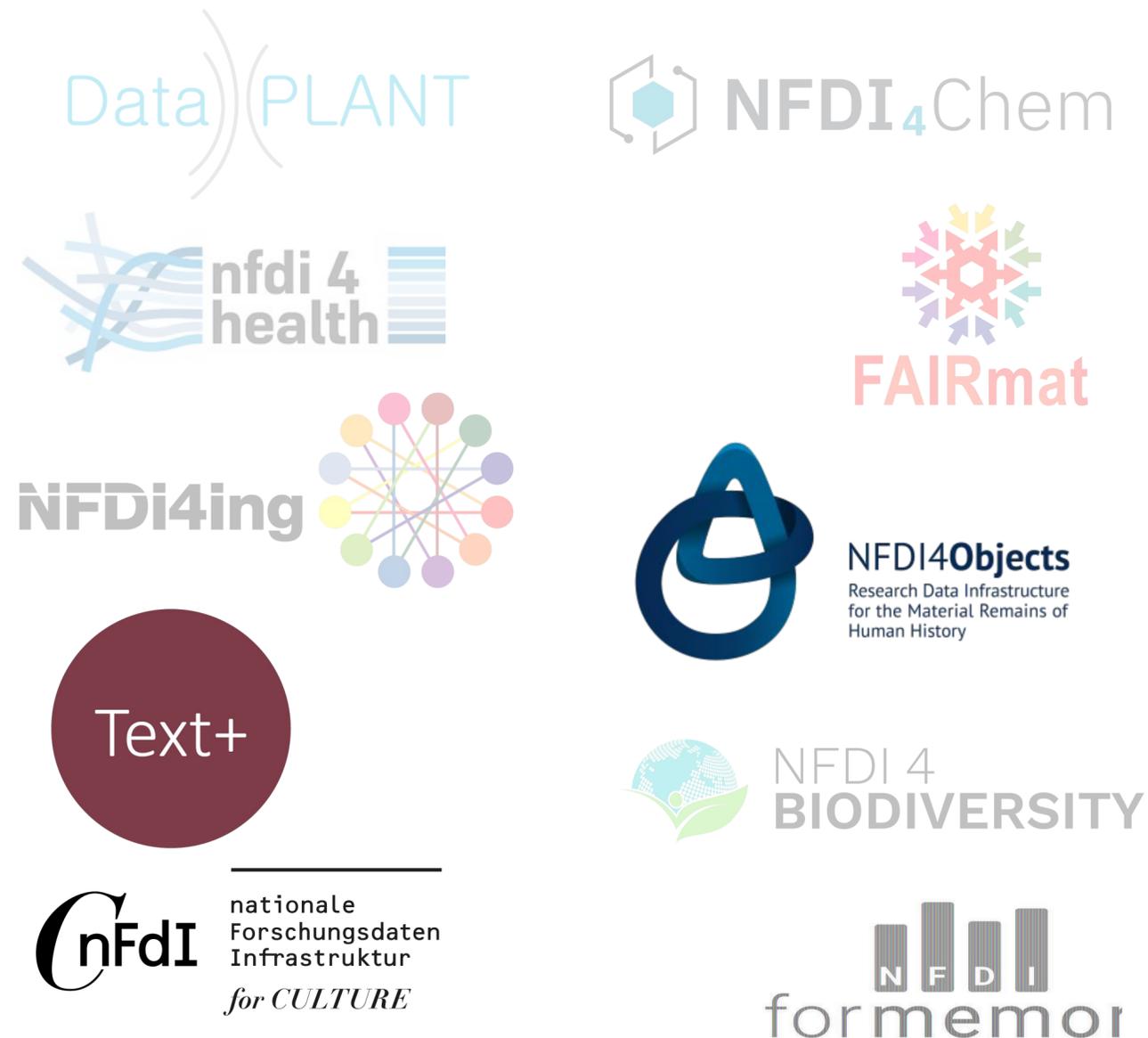
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- NFDI4Memory: ???

# Terminology Services der NFDI

Terminologien existieren in diversen NFDI Konsortien



## NFDI4Memory

### **58 Einsatz von Normdaten und kontrolliertem Vokabulare zur fachspezifischen Beschreibung von Forschungsdaten**

Als Forschungsdatenkurator möchte ich Normdaten und kontrollierte Vokabulare verwenden, um Forschungsdaten möglichst fachspezifisch und mit anderen Ressourcen integrierbar zu beschreiben. Normdaten wie insbesondere die GND wären für eine effiziente Erfassung von Autoren und Forschungseinrichtungen per Autovervollständigung sehr naheliegend. Leider fehlt dafür ebenso wie für den Einsatz kontrollierter Vokabulare oft eine Unterstützung durch die technischen Plattformen. So muss man z.B. im DataCite-Editor des DHVLab der LMU die GND-IDs umständlich über OGDN heraussuchen und manuell in das Eingabeformular eintragen. Kontrollierte Vokabulare sollten möglichst im SKOS-Format eingebunden werden können, da viele relevante Klassifikationssysteme, Thesauri und Gazetteers in diesem Format vorliegen, wie etwa das für historische Forschung relevante HISCO oder ICONCLASS oder auch PeriodO als Verzeichnis historischer Perioden. Am ehesten scheint noch die Web Publishing-Plattform Omeka S mit dem Value Suggest-Modul diese Anforderungen zu erfüllen. Es wäre wünschenswert, wenn im Rahmen von 4Memory entsprechende Module für bestehende Systeme oder Eigenentwicklungen entstehen würden, die diese für die Metadatenkuration sehr naheliegenden Anforderungen erfüllen.

**Quelle:** <https://t.ly/1HlGc>

n bieten Terminologien in  
fischen Gebiet

onclass; Getty

DOC-CRM; LIDO; GND, Getty

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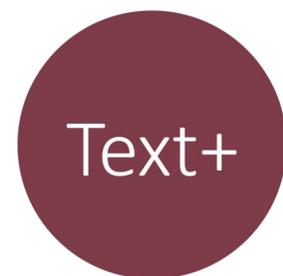
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- **BARTOC**



# Terminology Services der NFDI

Terminologien existieren in diversen NFDI Konsortien

BARTOC.org Vocabularies Registries Software About Contact Statistics

## Terminology Registries

BARTOC knows about [terminology registries](#), including itself. [registries](#) also provide access to full terminologies either via an API (terminology **service**) or by other means (terminology **repository**).\*

Name	Links	Type
<a href="#">GODAN Action VEST / AgroPortal map (VEST Registry)</a>		registry
<a href="#">coli-conc KOS Registry</a>	 <a href="#">jskos</a>	registry
<a href="#">DANTE</a>	 <a href="#">jskos</a>	<b>service</b>
<a href="#">FAIRSharing</a>		registry
<a href="#">OBO Foundry</a>		registry
<a href="#">Getty Vocabularies</a>		<b>repository</b>
<a href="#">EU Vocabularies</a>		registry
<a href="#">Conservation controlled vocabularies</a>		registry
<a href="#">European Register of Marine Species (ERMS)</a>		registry
<a href="#">Metadata registry of the German Network for Educational Research Data</a>		<b>repository</b>
<a href="#">onomy.org</a>		<b>repository</b>

terminoi

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- **BARTOC**
  - **B**asic **R**egister of **T**hesauri, **O**ntologies & **C**lassifications ist eine Datenbank von Wissensorganisationssystemen und KOS-bezogenen Registern

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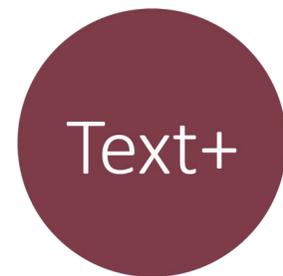
BARTOC.org Vocabularies Registries Software About Contact

## NFDI4Chem Terminology Service

NFDI4Chem Terminology Service is a repository for chemistry and related ontologies <sup>en</sup>

URI	<a href="http://bartoc.org/en/node/18936">http://bartoc.org/en/node/18936</a>
Services (API)	<a href="https://terminology.nfdi4chem.de/ts/api">https://terminology.nfdi4chem.de/ts/api</a> (Ontology Lookup Service (OLS))
Homepage	<a href="https://terminology.nfdi4chem.de/ts/">https://terminology.nfdi4chem.de/ts/</a>
Created	2021
Type	terminology service
Vocabularies	<a href="#">search in BARTOC</a>

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- Enthält auch die NFDI-Terminologiedienste und -Register



# Terminology Services der NFDI

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[BARTOC.org](#) [Vocabularies](#) [Registries](#) [Software](#) [About](#) [Contact](#)

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Created	2021
Type	terminology service
Vocabularies	<a href="#">search in BARTOC</a>

[C.org](#) [Vocabularies](#) [Registries](#) [Software](#) [About](#) [Contact](#)

### Semantic Lookup Platform

The Terminology Service is a repository for biomedical resources that aims to provide a single point of access to multiple versions. <sup>en</sup>

URI	<a href="http://bartoc.org/en/node/18938">http://bartoc.org/en/node/18938</a>
Services (API)	<a href="https://semanticlookup.zbmed.de/ols/docs/api">https://semanticlookup.zbmed.de/ols/docs/api</a> (Ontology Lookup Service (OLS))
Homepage	<a href="https://semanticlookup.zbmed.de/">https://semanticlookup.zbmed.de/</a>
Type	terminology service
Vocabularies	<a href="#">search in BARTOC</a>

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# Terminology Services der NFDI

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### GFBio Terminology Server

"The GFBio Terminology Server is a core component of the GFBio infrastructure and all simple controlled vocabularies to complex ontologies – with other researchers. It is de  
Institute of Computer Science (both part of the Freie Universität Berlin).<br /><sup>en</sup> (OLS))

The Terminology Server and its public APIs (Application Programming Interfaces) rely  
users with a machine-readable access to terms, concepts and their relations for a varie

URI	<a href="http://bartoc.org/en/node/17789">http://bartoc.org/en/node/17789</a>
Services (API)	<a href="http://terminologies.gfbio.org/developer_section/api.html">http://terminologies.gfbio.org/developer_section/api.html</a>
Homepage	<a href="http://terminologies.gfbio.org/">http://terminologies.gfbio.org/</a>
Created	2014
Type	terminology service (le point)
Vocabularies	<a href="#">search in BARTOC</a>

Services (API)	<a href="https://semanticlookup.zbmed.de/ols/docs/api">https://semanticlookup.zbmed.de/ols/docs/api</a> (Ontology Lookup Servi
Homepage	<a href="https://semanticlookup.zbmed.de/">https://semanticlookup.zbmed.de/</a>
Type	terminology service
Vocabularies	<a href="#">search in BARTOC</a>

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# Terminology Services der NFDI

## Terminologien existieren in diversen NFDI Konsortien

BARTOC.org Vocabularies Registries Software About Contact

BARTOC.org Vocabularies Registries Software About Contact

BARTOC.org Vocabularies Registries Software About Contact

### NFDI4Ing Terminology Service

NFDI4Ing Terminology Service is a repository for engineering ontologies that allow you to browse engineering ontologies either through this website or via the Rest API. It was developed and maintained by TIB as an extension of the TIB Central Terminology Service.

URI	<a href="http://bartoc.org/en/node/18935">http://bartoc.org/en/node/18935</a>
Services (API)	<a href="https://terminology.nfdi4ing.de/ts/docs">https://terminology.nfdi4ing.de/ts/docs</a> (Ontology)
Homepage	<a href="https://terminology.nfdi4ing.de/ts">https://terminology.nfdi4ing.de/ts</a>
Identifiers	<a href="https://www.wikidata.org/wiki/Q108057909">https://www.wikidata.org/wiki/Q108057909</a>
Created	2021
Type	<a href="#">terminology service</a>
Vocabularies	<a href="#">search in BARTOC</a>

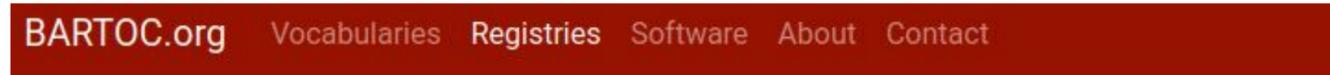
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Type	<a href="#">terminology service</a>
Vocabularies	<a href="#">search in BARTOC</a>

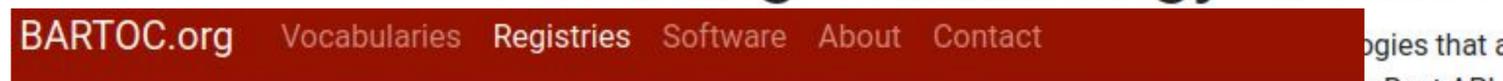
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## NFDI4Ing Terminology Service



### DANTE

DANTE (Datendrehscheibe für Normdaten und Terminologien) is a vocabulary for museums and related organizations.

 URI <http://bartoc.org/en/node/19999>

Services (API) <https://api.dante.gbv.de/> (JSKOS API) 1057909

 Homepage <https://api.dante.gbv.de/>

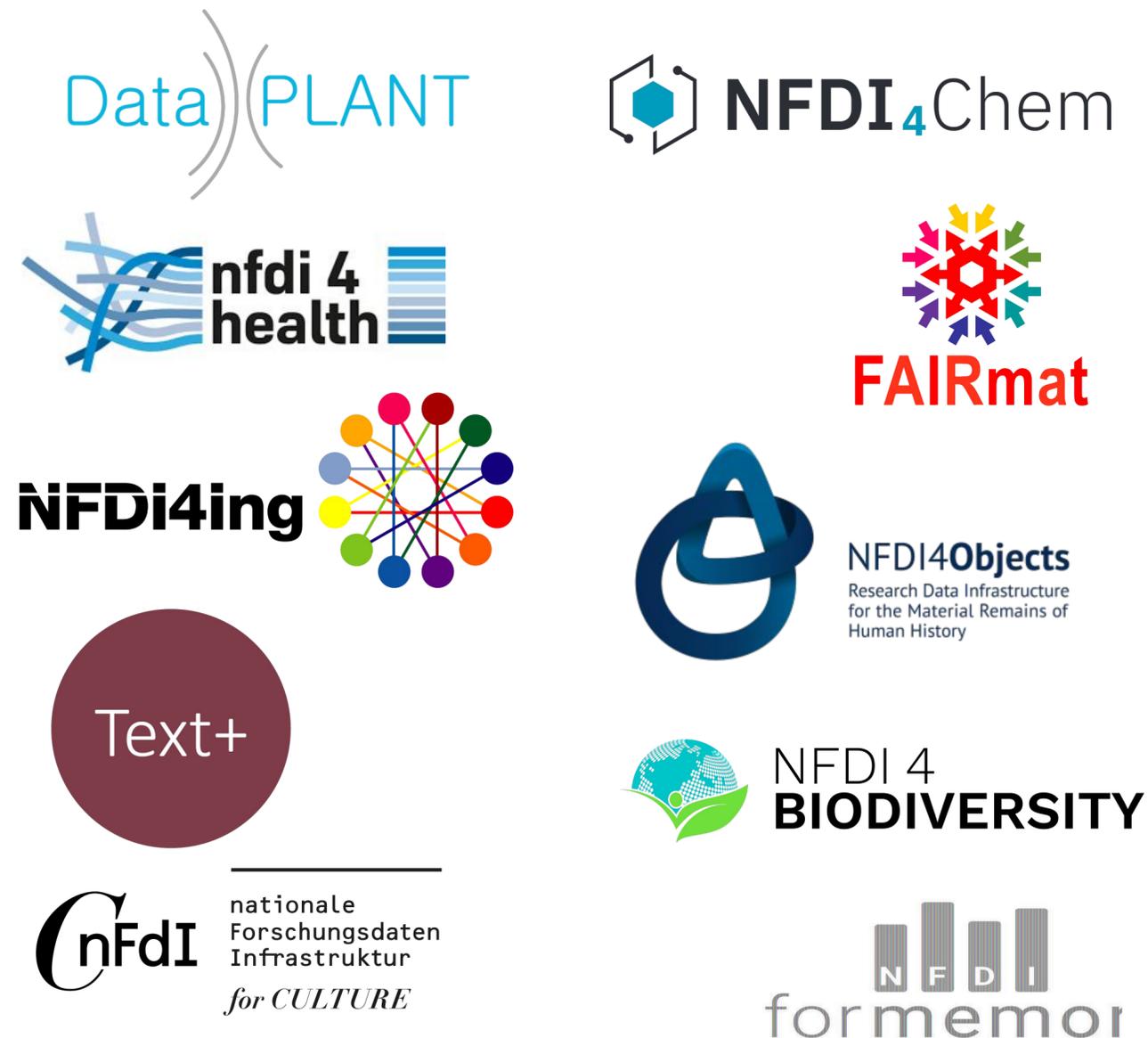
Type [terminology service](#)

Vocabularies [search in BARTOC](#)

- viele NFDI Konsortien bieten Terminologien in ihren domänenspezifischen Gebiet
- **BARTOC**
- **B**asic **R**egister of **T**hesauri, **O**ntologies & **C**lassifications ist eine Datenbank von Wissensorganisationssystemen und KOS-bezogenen Registern
- Enthält auch die NFDI-Terminologiedienste und -Register

# Terminology Services der NFDI

Terminologien existieren in diversen NFDI Konsortien

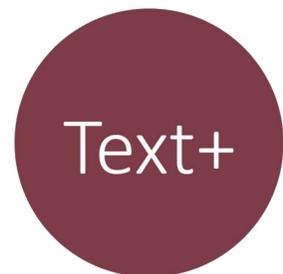


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- **BARTOC**
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# Terminology Services der NFDI

Terminologien existieren in diversen NFDI Konsortien

- viele NFDI Konsortien bieten Terminologien in ihren domänenspezifischen Gebiet



## NFDI4Memory

[...] Normdaten [...] wären für eine effiziente Erfassung [...] per Autovervollständigung sehr naheliegend. Leider fehlt dafür [...] oft eine Unterstützung durch die technischen Plattformen. [...] Es wäre wünschenswert, wenn [...] entsprechende Module für bestehende Systeme oder Eigenentwicklungen entstehen würden [...]

Quelle: <https://t.ly/1HlGc>



esauri, **O**ntologies &  
ne Datenbank von  
nssystemen und  
gistern

DI-Terminologiedienste

- **es existieren diverse technische Lösungen für Terminologiedienste**

Terminology Services der NFDI

Basisdienst: TS4NFDI

Anwendung & Integration von Terminologiediensten

# Basisdienst: TS4NFDI

## Was ist ein Basisdienst?



**... ist eine technisch-organisatorische Lösung, die in der Regel Folgendes umfasst ...**

1. Speicher- und Datenverarbeitungsdienste
2. Software, Prozesse und Arbeitsabläufe
3. Unterstützung für Service Desks

**... mit verschiedenen technischen Niveaus!**

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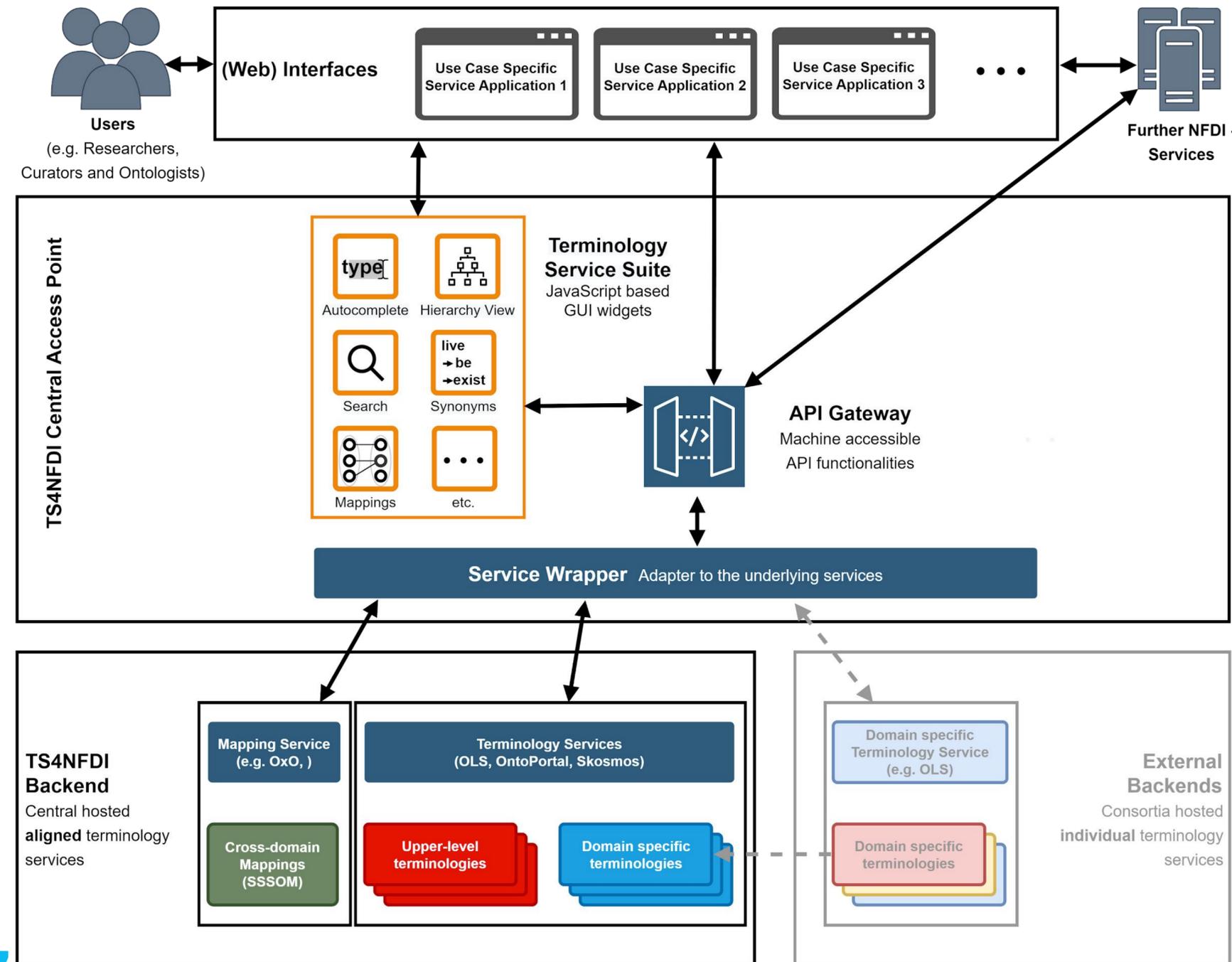
**Idealerweise erfüllt ein Basisdienst die folgenden Bedingungen**

1. schafft einen Mehrwert für alle Nutzer
2. bündelt bestehende Dienste
3. berücksichtigt nachhaltige, skalierbare Systeme
4. ist zeit- und kosteneffektiv mit nachvollziehbaren KPIs

# Basisdienst: TS4NFDI

## Übersicht

- **Terminology Services 4 NFDI**
- zentral gehostete, aufeinander abgestimmte Terminologiedienste (OLS, OntoPortal, SKOSMOS)
- bietet einen domänenübergreifenden Mapping-Dienst (Unterstützung von SSSOM)



**Link zum Antrag:**



<https://doi.org/10.5281/zenodo.12188787>

# Basisdienst: TS4NFDI

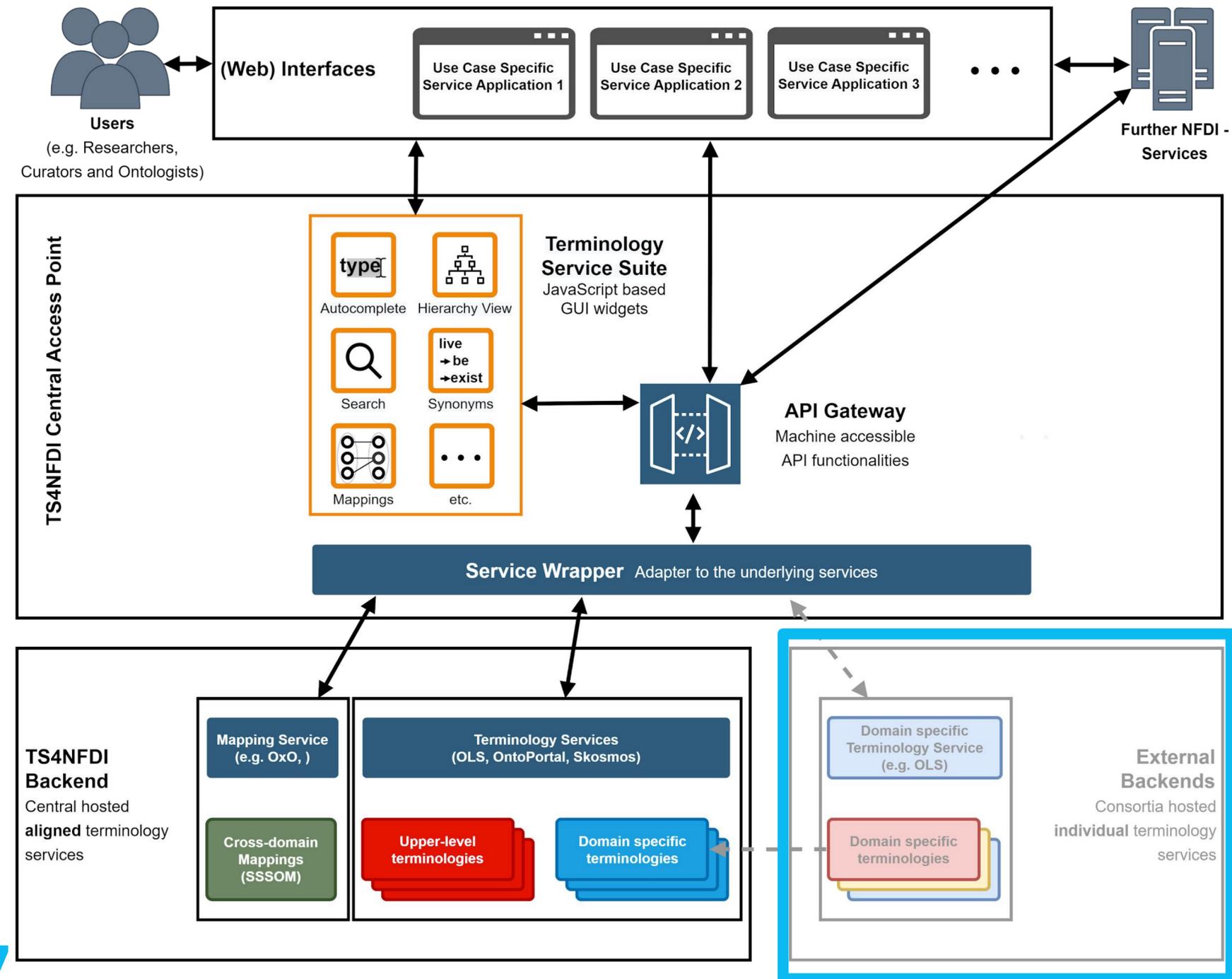
## Übersicht

- **Terminology Services 4 NFDI**
- zentral gehostete, aufeinander abgestimmte Terminologiedienste (OLS, OntoPortal, SKOSMOS)
- bietet einen domänenübergreifenden Mapping-Dienst (Unterstützung von SSSOM)
- kann externe Terminologiedienste bedienen

**Link zum Antrag:**



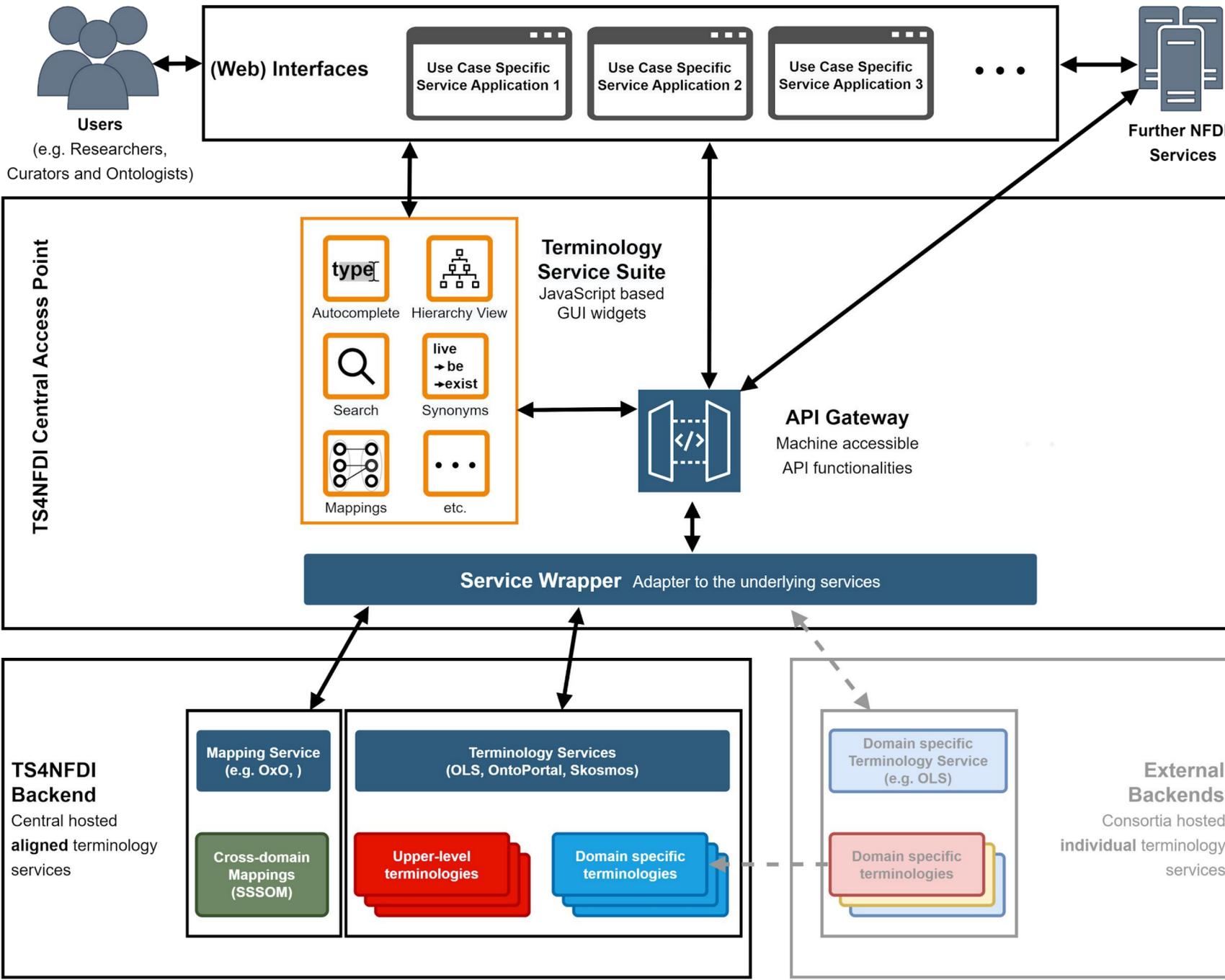
<https://doi.org/10.5281/zenodo.12188787>



# Basisdienst: TS4NFDI

## Übersicht

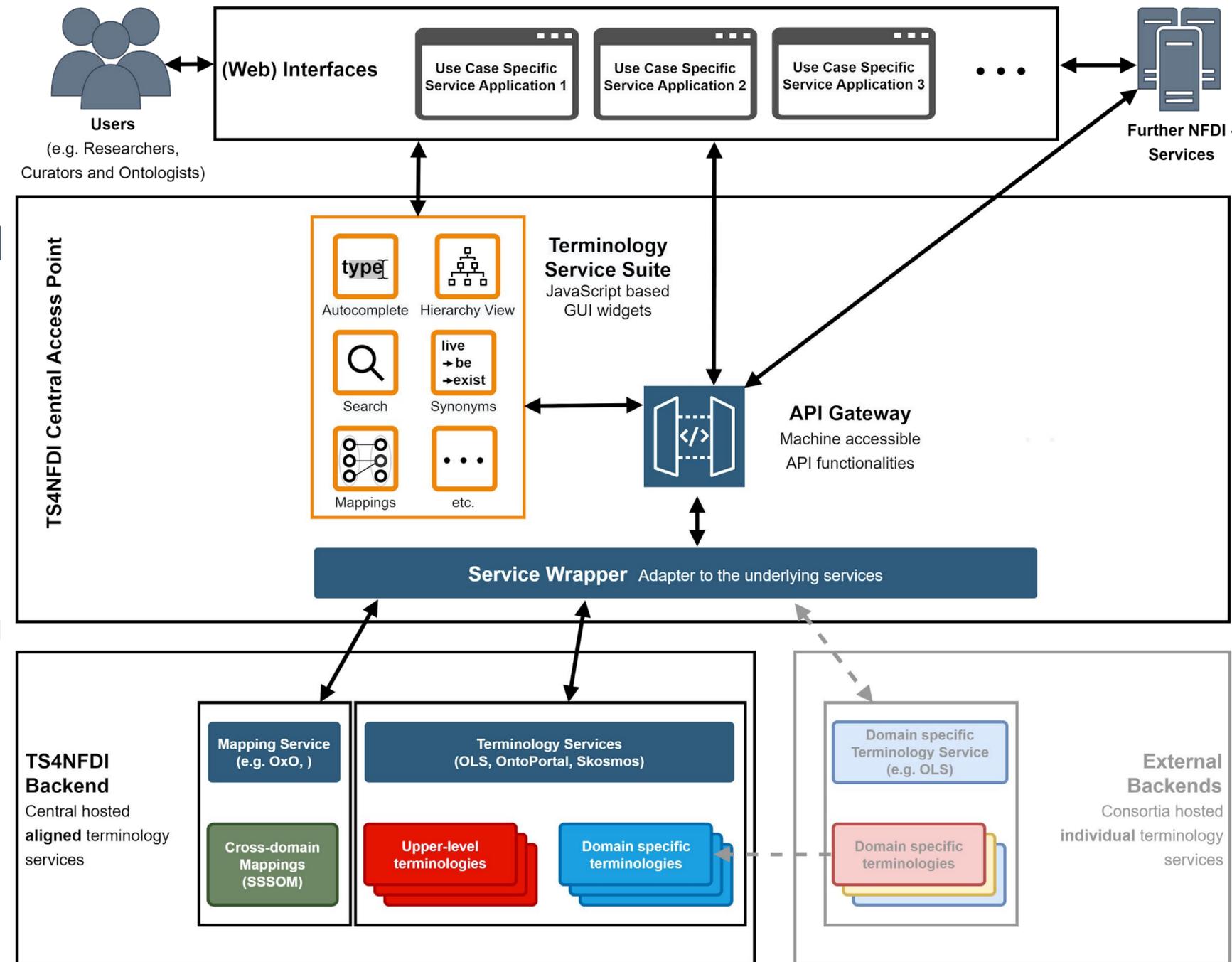
- Terminology **S**ervices **4** NFDI
- TS4NFDI zielt darauf ab, die Terminologieverwaltung innerhalb der NFDI zu standardisieren und zu harmonisieren



# Basisdienst: TS4NFDI

## Übersicht

- Terminology **S**ervices **4** NFDI
- TS4NFDI zielt darauf ab, die Terminologieverwaltung innerhalb der NFDI zu standardisieren und zu harmonisieren
- Erleichterung der Konsensbildung und der Interoperabilität von Diensten zwischen verschiedenen Disziplinen, um eine gemeinsame Wissensdarstellung und einen gemeinsamen technischen Rahmen zu schaffen.



Terminologiedienste innerhalb der NFDI

Basisdienst: TS4NFDI

Anwendung & Integration von Terminologiediensten

# Anwendung & Integration von Terminologiediensten

Terminologiedienste existieren in diversen NFDI Konsortien



# Anwendung & Integration von Terminologiediensten

Terminologiedienste existieren in diversen NFDI Konsortien



**Venus**

# Anwendung & Integration von Terminologiediensten

Terminologiedienste existieren in diversen NFDI Konsortien



# Anwendung & Integration von Terminologiediensten

Terminologiedienste existieren in diversen NFDI Konsortien



**Venus**

# Anwendung & Integration von Terminologiediensten

Terminologiedienste existieren in diversen NFDI Konsortien



**Morgenstern**

# Anwendung & Integration von Terminologiediensten

Terminologiedienste existieren in diversen NFDI Konsortien



**Abendstern**



**Morgenstern**

# Anwendung & Integration von Terminologiediensten

Terminologiedienste existieren in diversen NFDI Konsortien



**Abendstern**

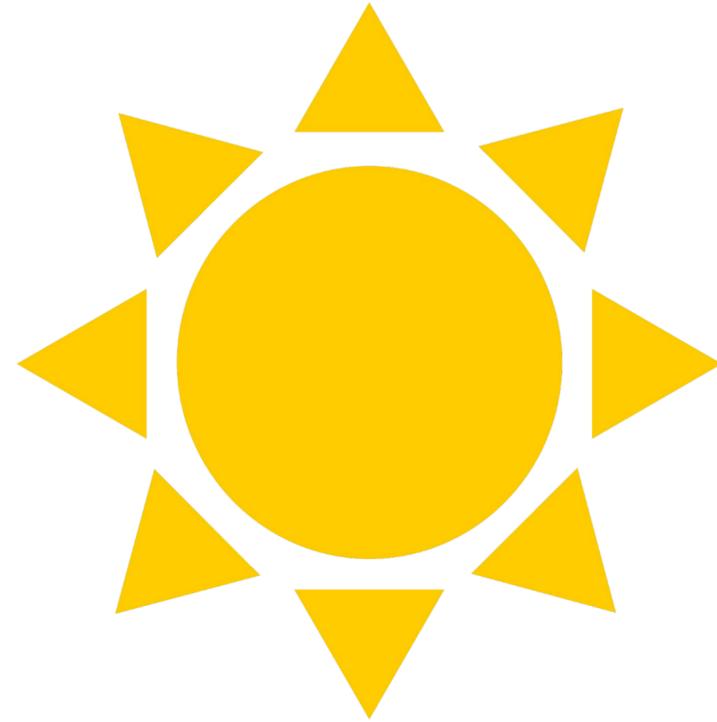


**Morgenstern**



# Anwendung & Integration von Terminologiediensten

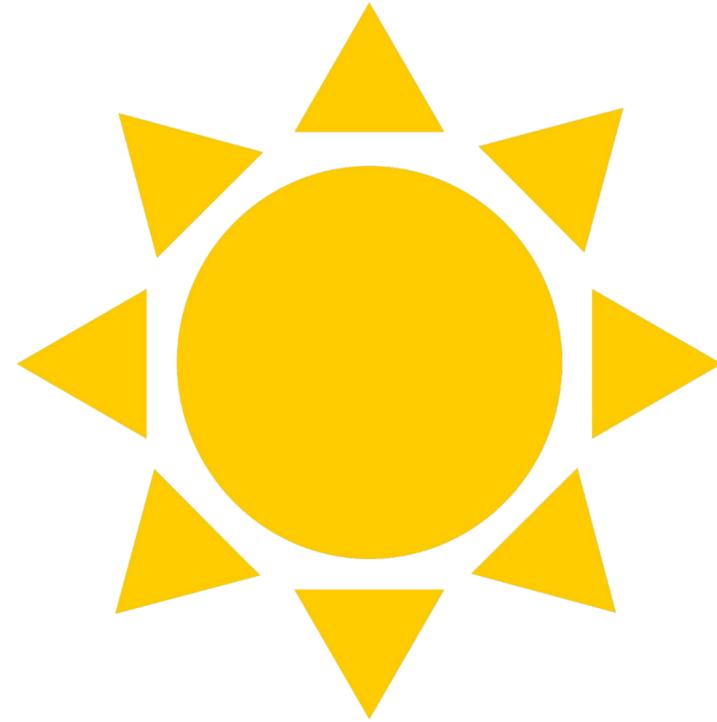
Terminologiedienste existieren in diversen NFDI Konsortien



**Sonne**

# Anwendung & Integration von Terminologiediensten

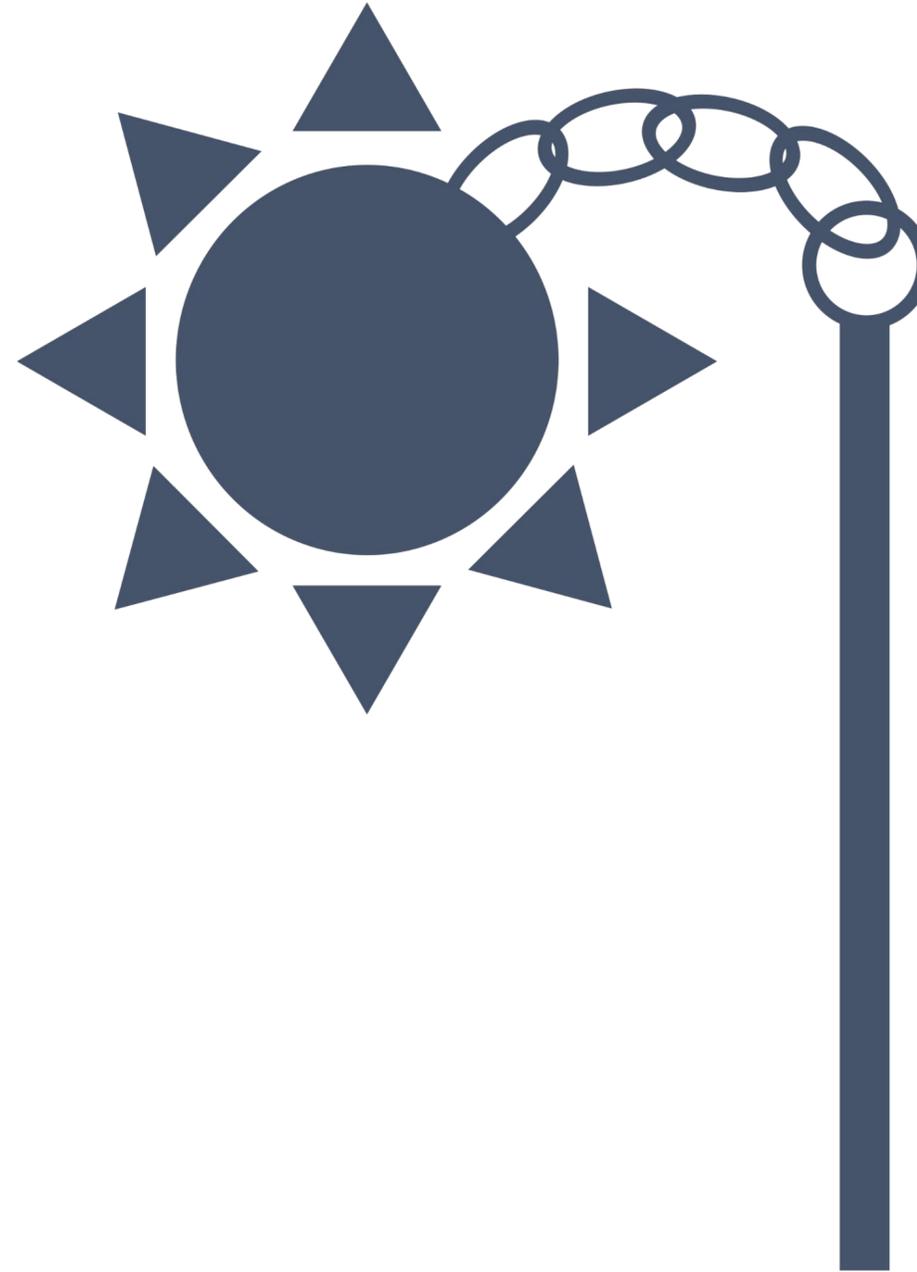
Terminologiedienste existieren in diversen NFDI Konsortien



**sun**

# Anwendung & Integration von Terminologiediensten

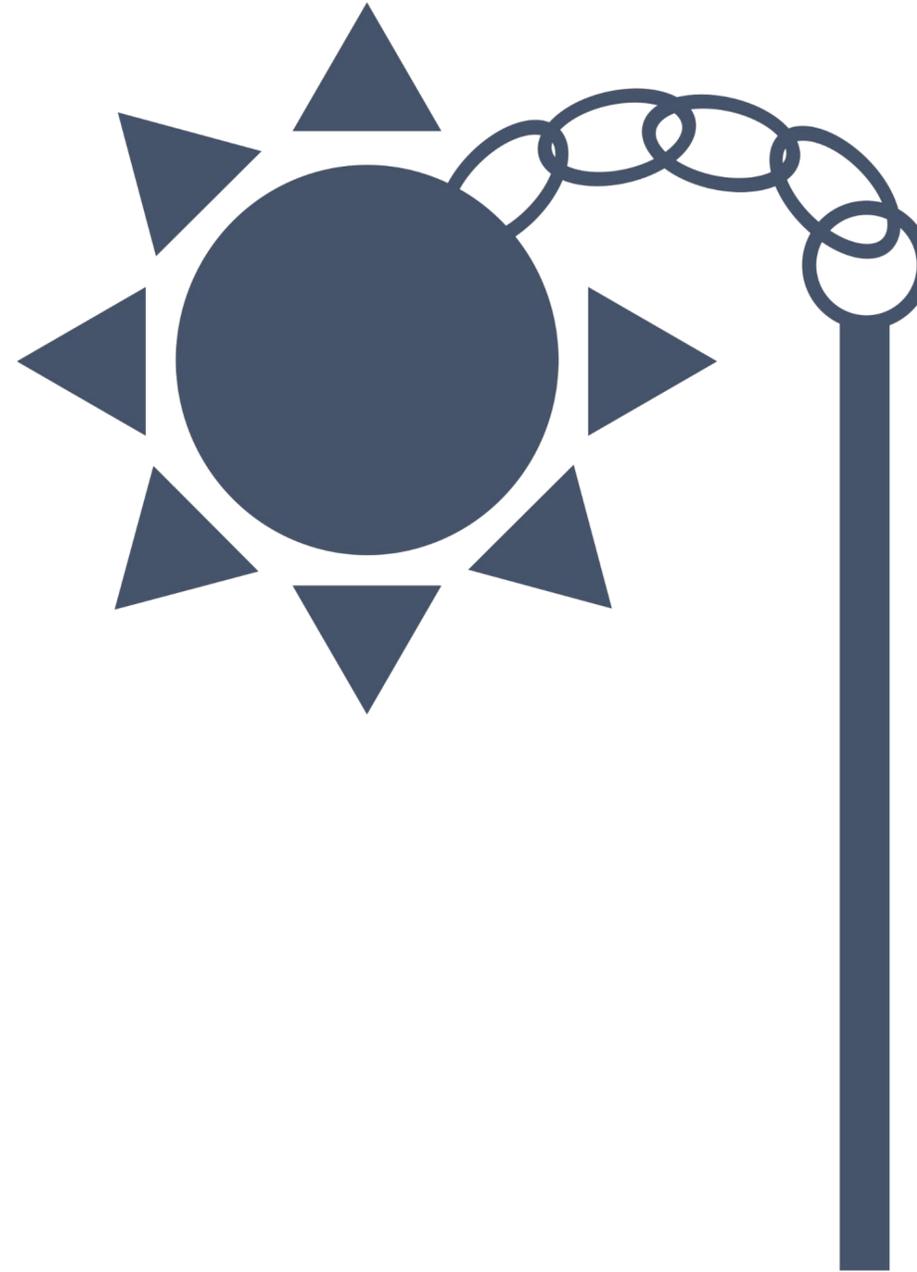
Terminologiedienste existieren in diversen NFDI Konsortien



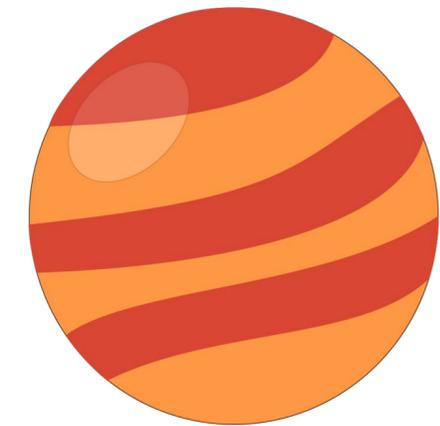
**Morgenstern**

# Anwendung & Integration von Terminologiediensten

Terminologiedienste existieren in diversen NFDI Konsortien



**Morgensterne**



# Anwendung & Integration von Terminologiediensten

Terminologiedienste existieren in diversen NFDI Konsortien



# Anwendung & Integration von Terminologiediensten

Terminologiedienste existieren in diversen NFDI Konsortien



**Terra-Sigilatta  
Schale**

# Anwendung & Integration von Terminologiediensten

Terminologiedienste existieren in diversen NFDI Konsortien



**Terra-Sigilatta  
Schale**



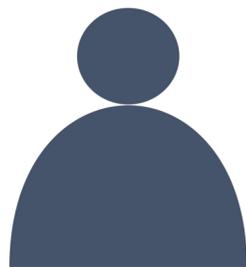
**ohne Namen**

# Anwendung & Integration von Terminologiediensten

Terminologiedienste existieren in diversen NFDI Konsortien



**Terra-Sigilatta  
Schale**

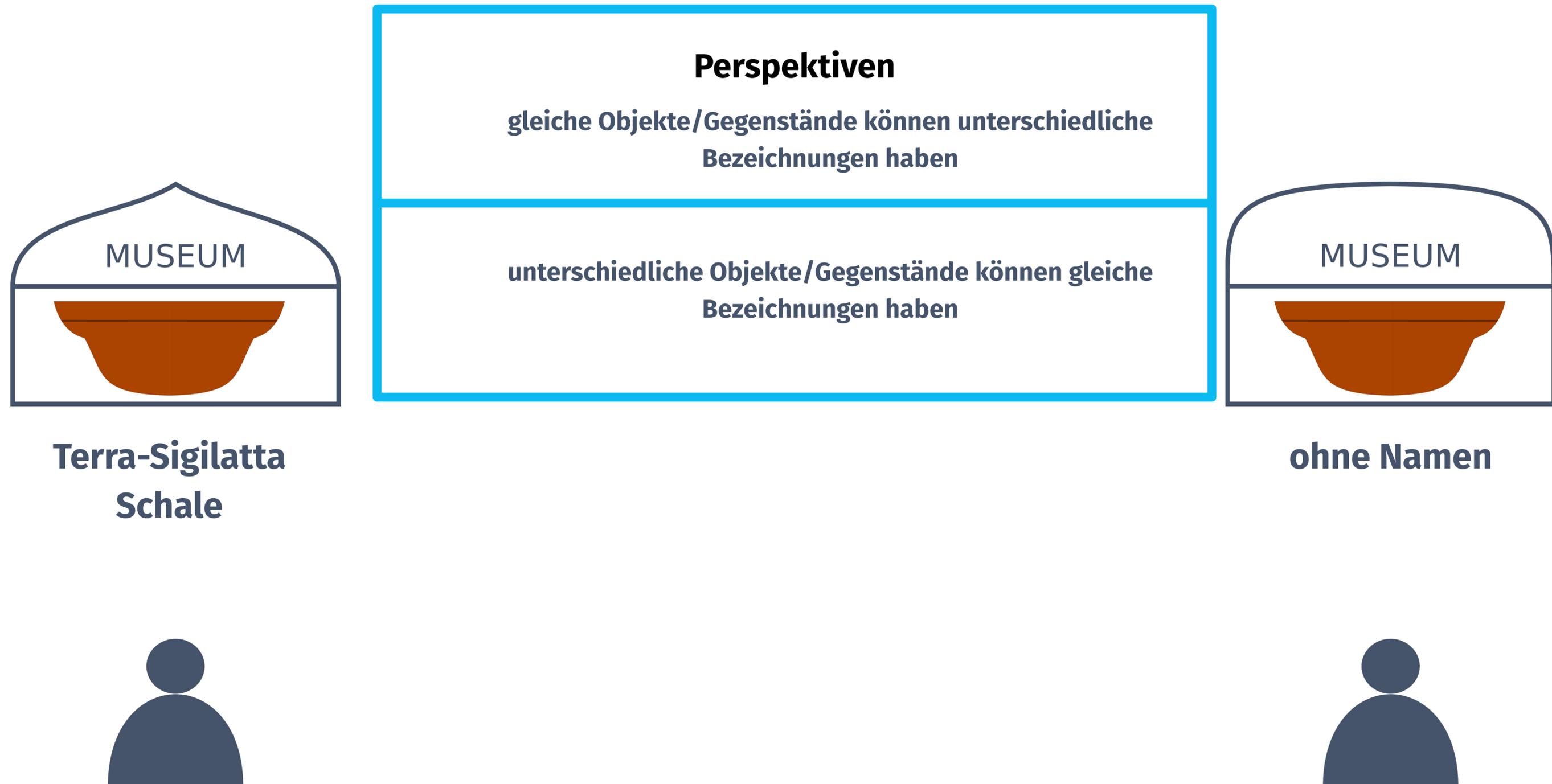


**ohne Namen**



# Anwendung & Integration von Terminologiediensten

Terminologiedienste existieren in diversen NFDI Konsortien



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# Anwendung & Integration von Terminologiediensten

Terminologiedienste existieren in diversen NFDI Konsortien



# Anwendung & Integration von Terminologiediensten

## Übersicht

- Semantische Suche



# Anwendung & Integration von Terminologiediensten

## Übersicht

- Semantische Suche
- Daten Annotation



# Anwendung & Integration von Terminologiediensten

## Übersicht

- Semantische Suche
- Daten Annotation
- erhöhte Benutzerfreundlichkeit



# Anwendung & Integration von Terminologiediensten

## Übersicht

- **Semantische Suche**
- Daten Annotation
- erhöhte Benutzerfreundlichkeit



# Anwendung & Integration von Terminologiediensten

## Semantische Suche - preVIEW

- **preprint viewer** für COVID-19 Preprints
- enthält automatisierte Annotationen
- beinhaltet eine semantische Konzeptsuche
- stellt eine umfassende API bereit, um Daten und Informationen für andere Dienste und Anwendungen zur Verfügung zu stellen

The screenshot shows the preVIEW: COVID-19 web application interface. At the top, there is a navigation bar with links for 'ABOUT', 'TUTORIAL', and 'CONTACT'. Below this, a banner for ZB MED (Informationszentrum Lebenswissenschaften) provides information about the service, including the number of preprints (44,221) and their sources (medRxiv, bioRxiv, ChemRxiv, ResearchSquare, arXiv, and Preprints.org). It also mentions that the data is updated daily and provides API access information.

The main interface features a search bar with a 'Multi' dropdown and a search input field. Below the search bar are 'Reset' and 'Search' buttons. A 'Publication Date' bar chart is visible on the left, showing the number of published documents over time. The search results section displays a list of documents, with the first one titled 'Physician's Hesitancy in Treating COVID-19 Patients and Its Associated Occupational Risk Factors in Indonesia: an Online Cross-Sectional Survey'. The authors listed are Dewi Sumaryani Soemarmo, Aria Kekalih, Ari Fahrial Syam, Evy Yuniastuti, Herikurniawan Herikurniawan, and Mikhael Yosia. The document ID is 10.20944/preprints202205.0408.v1, dated 2022-05-31, and sourced from preprints.org.

On the right side, there are buttons for 'enable feedback mode' and 'Expand all abstracts'. Below these, a 'Highlight semantic concepts' section is visible, with a checkbox for 'Medical Subject Headings - Diseases' checked.

# Anwendung & Integration von Terminologiediensten

## Semantische Suche - preVIEW

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The ZB MED preprint Viewer preVIEW: COVID-19 includes 44.221 COVID-19 related preprints from medRxiv (15.091) and bioRxiv (5.264), ChemRxiv (275), ResearchSquare (8.274), arXiv (5.892) and from Preprints.org (1.768). The service has last been updated 4 hours ago. We try to update the data on a daily basis (7am CET/CEST). The web page can also be accessed via API. If you use our application, please cite: 10.3233/SHTI210124 and 10.32384/jeahil17484

Query builder Expert Search Help

Multi enter a search term

Reset Search

Refine your search. Currently 44.221 documents are matched

Publication Date

Physician's Hesitancy in Treating COVID-19 Patients and Its Associated Occupational Risk Factors in Indonesia: an Online Cross-Sectional Survey

Authors: Dewi Sumaryani Soemarmo, Aria Kekalih, Ari Fahrial Syam, Evy Yuniastuti, Herikurniawan Herikurniawan, Mikhael Yosia

10.20944/preprints202205.0408.v1 Date: 2022-05-31 Source: preprints.org

enable feedback mode

Expand all abstracts

Highlight semantic concepts

Medical Subject Headings - Diseases

**access:**

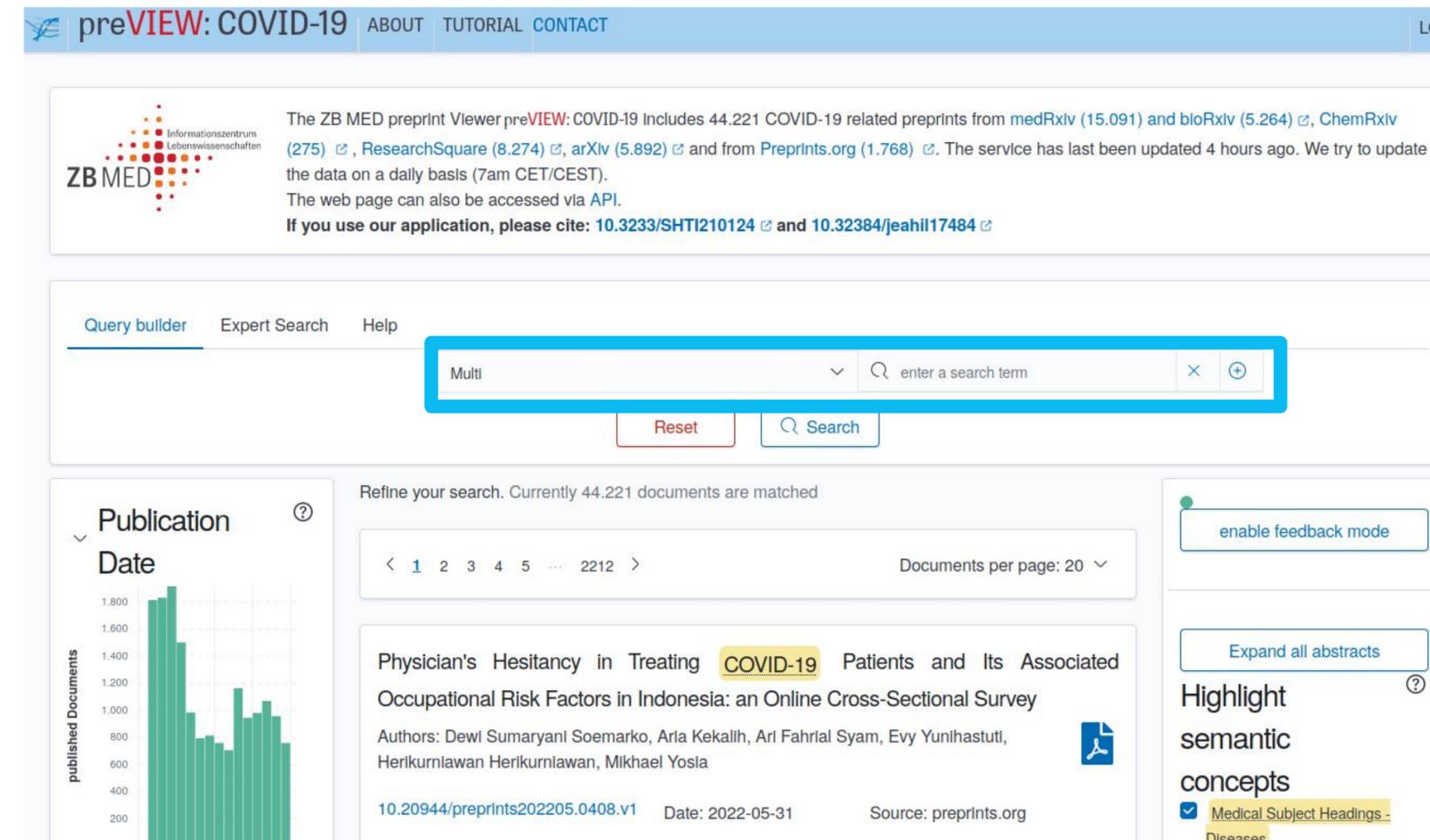
<https://preview.zbmed.de>



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preVIEW: COVID-19 ABOUT TUTORIAL CONTACT

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1 2 3 4 5 ... 2212 Documents per page: 20

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**access:**

<https://preview.zbmed.de>



# Anwendung & Integration von Terminologiediensten

## Semantische Suche - preVIEW

- **preprint viewer** für COVID-19 Preprints
- enthält automatisierte Annotationen
- beinhaltet eine **semantische** Konzept**suche**
- stellt eine umfassende API bereit, um Daten und Informationen für andere Dienste und Anwendungen zur Verfügung zu stellen
- Die autovervollständigungs Funktionalität vom Terminologiedienst ist direkt in preVIEW integriert

The screenshot shows the preVIEW: COVID-19 search interface. The search bar contains the word 'diabetes'. Below the search bar, a list of results is displayed, each with a yellow dot, the term, a source (EFO or MESH), and a corresponding ID in a green box. The results are:

- diabetes mellitus EFO > EFO\_0000400
- diabetes mellitus type 2 associated cataract EFO > EFO\_0004596
- Diabetes Insipidus MESH > D003919
- Diabetes Mellitus MESH > D003920
- Diabetes Insipidus, Neurogenic MESH > D020790
- Diabetes Complications MESH > D048909
- Diabetes Insipidus, Nephrogenic MESH > D018500

Below the search results, there is a bar chart showing 'published Doc' counts, a metadata section for 'Occupational Risk Factors in Indonesia: an Online Cross-Sectional Survey' with authors and dates, and a sidebar for 'semantic concepts' with a checked box for 'Medical Subject Headings - Diseases'.

**access:**

<https://preview.zbmed.de>



# Anwendung & Integration von Terminologiediensten

## Übersicht

- Semantische Suche



- **Daten Annotation**

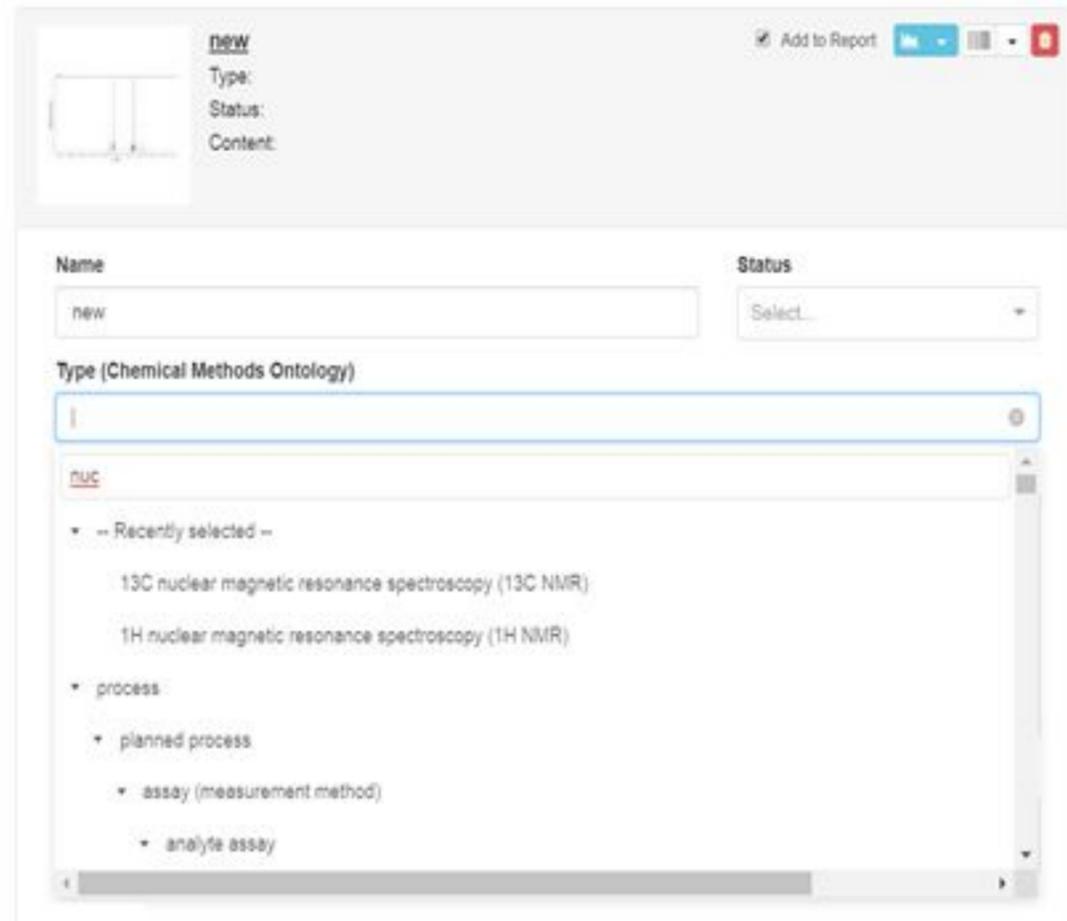


- erhöhte Benutzerfreundlichkeit



# Anwendung & Integration von Terminologiediensten

## Datenannotationsdienste - Chemotion ELN



The screenshot shows a web interface for creating a new entry in the Chemotion ELN. At the top, there is a 'new' button and an 'Add to Report' checkbox. Below this, there are fields for 'Name' (containing 'new') and 'Status' (a dropdown menu set to 'Select...'). The 'Type (Chemical Methods Ontology)' field is a dropdown menu currently set to 'I'. A list of ontology terms is displayed below, including '13C nuclear magnetic resonance spectroscopy (13C NMR)', '1H nuclear magnetic resonance spectroscopy (1H NMR)', 'process', 'planned process', 'assay (measurement method)', and 'analyte assay'.

- Chemotion **E**lectronic **L**aboratory **N**otebook (ELN)

access: <https://chemotion.net/>



# Anwendung & Integration von Terminologiediensten

## Datenannotationsdienste - Chemotion ELN

new  
Type:  
Status:  
Content:

Add to Report

Name: new Status: Select...

Type (Chemical Methods Ontology): I

13C nuclear magnetic resonance spectroscopy (13C NMR)  
1H nuclear magnetic resonance spectroscopy (1H NMR)  
process  
planned process  
assay (measurement method)  
analyte assay

- Chemotion **E**lectronic **L**aboratory **N**otebook (ELN)
- Verwendet Konzepte der
  - reaction ontology
  - chemical methods ontology

access: <https://chemotion.net/>



# Anwendung & Integration von Terminologiediensten

## Datenannotationsdienste - Chemotion ELN

new  
Type:  
Status:  
Content:

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Name: new Status: Select...

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1H nuclear magnetic resonance spectroscopy (1H NMR)  
process  
planned process  
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analyte assay

- Chemotion **E**lectronic **L**aboratory **N**otebook (ELN)
- Verwendet Konzepte der
  - reaction ontology
  - chemical methods ontology
- zur Annotierung
  - von Reaktionen in Experimenten
  - analytischen Methoden

access: <https://chemotion.net/>



# Anwendung & Integration von Terminologiediensten

## Datenannotationsdienste - Metadata Annotation Workbench

The screenshot shows the Metadata Annotation Workbench interface. At the top, there are links for 'About' and 'Tutorial'. The main area is divided into two sections: 'Current variable' and 'Annotation'. In the 'Current variable' section, the variable 'Sex' is entered. Below it are buttons for 'Previous variable' and 'Next variable'. The 'Annotation' section shows a dropdown menu with 'Biological sex (property) (qualifier value)' selected. Below this, there are tabs for 'Suggestion' and 'Search'. The 'Search' tab is active, showing a search input with 'Sex' and a search button. Below the search input is a table with columns for 'IRI', 'Label', and 'Ontology'. The table contains three rows of search results. The first row is for 'Sex' from the 'mesh' ontology. The second row is for 'Sex/gender' from the 'maelstrom' ontology. The third row is for 'Sex Workers' from the 'mesh' ontology. To the right of the search results is a 'Concept Information' panel for the selected 'Sex' concept. It shows the MESH ID 'D012723' and the URL 'http://purl.bioontology.org/ontology/MESH/D012723'. Below this is the definition of 'Sex' and a section for 'Alternative Names' which includes 'Geschlecht (DE)' and 'Sex, Phenotypic'.

- Annotation von Fragebögen, Data Dictionaries und Fallstudien
- Eingabe: standardisierte .csv-Dateien
- Wiederverwendung der Terminologien aus SemLookP
- freie Auswahl an Terminologien

access: [mda.nfdi4health.de](https://mda.nfdi4health.de)



# Anwendung & Integration von Terminologiediensten

## Datenannotationsdienste - Metadata Annotation Workbench

The screenshot shows the Metadata Annotation Workbench interface. At the top, there are links for 'About' and 'Tutorial'. The 'Current variable' section displays 'Sex' in a text box, with an 'Annotation' dropdown menu set to 'Biological sex (property) (qualifier value)'. Below this are buttons for 'Previous variable' and 'Next variable'. The 'Search' section shows a search bar with 'Sex' entered. Below the search bar is a table of search results:

IRI	Label	Ontology
<a href="http://purl.bioontology.org/ontology/MESH/D012723">http://purl.bioontology.org/ontology/MESH/D012723</a>	Sex	mesh
<a href="http://semanticlookup.zbmed.de/km/MAELSTROM/ZBMED_MS_000000003">http://semanticlookup.zbmed.de/km/MAELSTROM/ZBMED_MS_000000003</a>	Sex/gender	maelstrom
<a href="http://purl.bioontology.org/ontology/MESH/D012723">http://purl.bioontology.org/ontology/MESH/D012723</a>	Sex Workers	mesh

The 'Concept Information' section for 'Sex' (MESH D012723) is highlighted with a blue box. It shows the IRI <http://purl.bioontology.org/ontology/MESH/D012723> and the definition: 'The totality of characteristics of reproductive structure, functions, PHENOTYPE, and GENOTYPE, differentiating the MALE from the FEMALE organism.' Below this are tabs for 'Alternative Names', 'Hierarchy', and 'Cross references'. The 'Alternative Names' tab is active, showing 'Geschlecht (DE)' and 'Sex, Phenotypic'.

- Annotation von Fragebögen, Data Dictionaries und Fallstudien
- Eingabe: standardisierte .csv-Dateien
- Wiederverwendung der Terminologien aus SemLookP
- freie Auswahl an Terminologien
- Die Konzeptinformationen sind direkt aus SemLookP integriert

access: [mda.nfdi4health.de](http://mda.nfdi4health.de)



# Anwendung & Integration von Terminologiediensten

## Übersicht

- Semantische Suche



- Daten Annotation



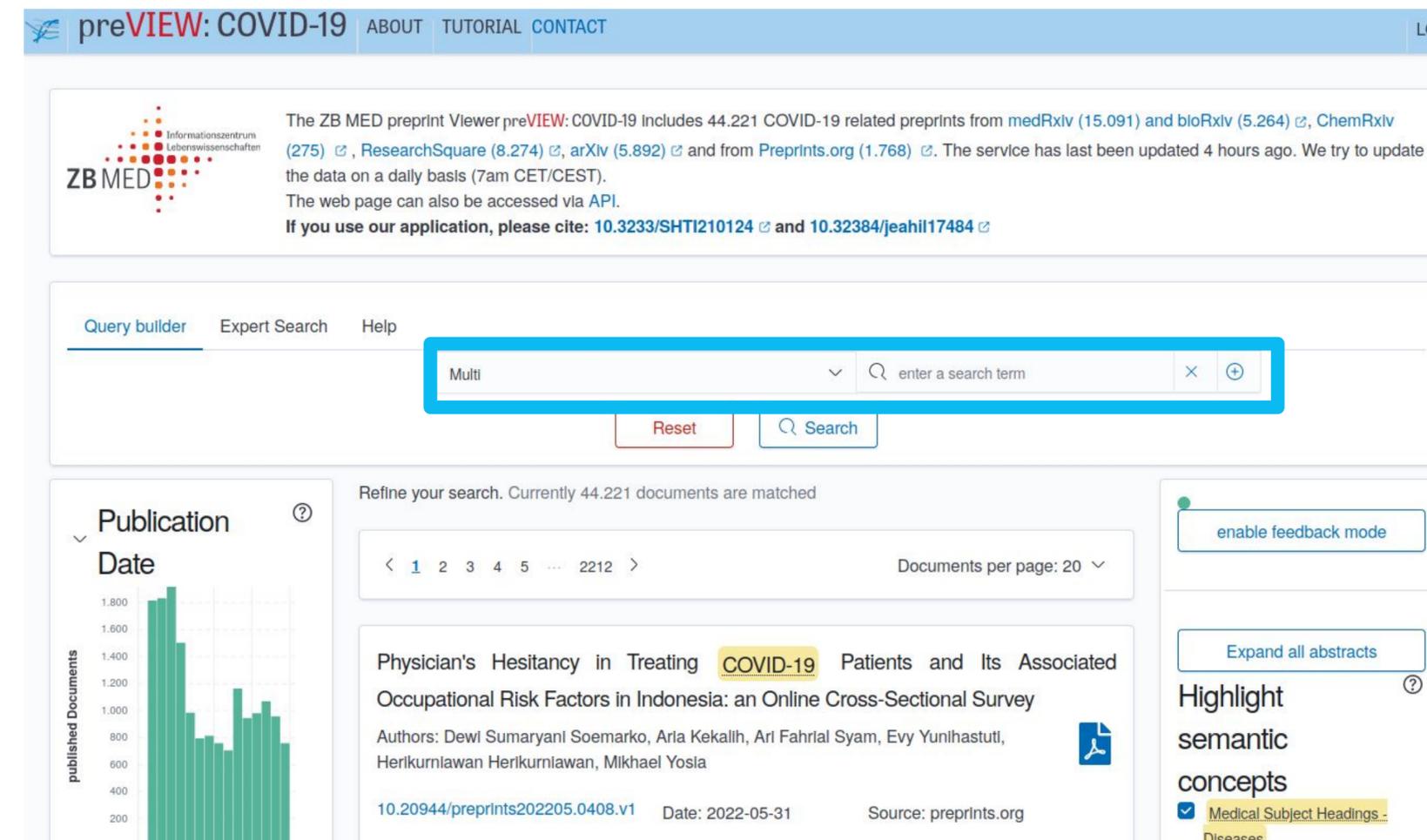
- **erhöhte Benutzerfreundlichkeit**



# Anwendung & Integration von Terminologiediensten

## Erhöhte Benutzerfreundlichkeit - preVIEW

- **preprint viewer** für COVID-19 Preprints
- enthält automatisierte Annotationen
- beinhaltet eine **semantische** Konzeptsuche
- stellt eine umfassende API bereit, um Daten und Informationen für andere Dienste und Anwendungen zur Verfügung zu stellen
- Die autovervollständigungs Funktionalität vom Terminologiedienst ist direkt in preVIEW integriert



The screenshot shows the preVIEW: COVID-19 interface. At the top, there's a navigation bar with 'preVIEW: COVID-19', 'ABOUT', 'TUTORIAL', and 'CONTACT'. Below this, a ZB MED logo is followed by a text block stating: 'The ZB MED preprint Viewer preVIEW: COVID-19 includes 44.221 COVID-19 related preprints from medRxiv (15.091) and bioRxiv (5.264), ChemRxiv (275), ResearchSquare (8.274), arXiv (5.892) and from Preprints.org (1.768). The service has last been updated 4 hours ago. We try to update the data on a daily basis (7am CET/CEST). The web page can also be accessed via API. If you use our application, please cite: 10.3233/SHTI210124 and 10.32384/jeahil17484'. Below this is a search bar with a dropdown menu set to 'Multi', a search input field containing 'enter a search term', and buttons for 'Reset' and 'Search'. A 'Publication Date' bar chart is visible on the left. The main search results area shows 'Refine your search. Currently 44.221 documents are matched' and a list of results, including one for 'Physician's Hesitancy in Treating COVID-19 Patients and Its Associated Occupational Risk Factors in Indonesia: an Online Cross-Sectional Survey'. On the right, there are buttons for 'enable feedback mode', 'Expand all abstracts', and 'Highlight semantic concepts'.

**access:**

<https://preview.zbmed.de>



# Anwendung & Integration von Terminologiediensten

## Erhöhte Benutzerfreundlichkeit - preVIEW

The screenshot displays the preVIEW: COVID-19 web application interface. At the top, there is a navigation bar with 'preVIEW: COVID-19', 'ABOUT', 'TUTORIAL', and 'CONTACT'. Below this, a banner for ZB MED (Informationszentrum Lebenswissenschaften) provides an overview of the service, stating it includes 69,164 COVID-19 related preprints from medRxiv and SSRN (12,889). A 'NEW' section mentions preprints retrieved via Europe PMC. A search bar is visible with 'Multi' selected and a 'Reset' button. A bar chart on the left shows 'Publication Date' from Dec 21 to Mar 23. The main content area shows search results for 'COVID-19' with 69,164 documents matched. A dropdown menu for 'MESH' is open, listing various terms like 'Disease, COVID-19 Virus', 'Infection, SARS-CoV-2', 'COVID19', 'Virus Infection, COVID-19', 'SARS CoV 2 Infection', 'COVID-19 Virus Infection', 'Infection, COVID-19 Virus', 'COVID-19 Virus Infections', 'SARS-CoV-2 Infections', 'COVID 19 Virus Infection', 'SARS-CoV-2 Infection', 'SARS Coronavirus 2 Infection', and 'COVID 19'. A sample document is shown with the title 'Molecular Pathways Disturbances during COVID-19 Lead to Cardiac Injury' and authors Mohammadjavad Sotoudehelan, Mohammad Soleimani, and Navid Farahmand. The abstract snippet reads: 'SARS-CoV-2 was detected in China in December 2019. Myocardial Injury is a crucial presentation of COVID-19, based on the association of...'. On the right, there are buttons for 'enable feedback mode' and 'Expand all abstracts', and a 'Highlight semantic concepts' section with a checked box for 'Medical Subject Headings - Diseases'.

access:

<https://preview.zbmed.de>



# Anwendung & Integration von Terminologiediensten

## Erhöhte Benutzerfreundlichkeit - preVIEW

The screenshot displays the preVIEW: COVID-19 web application interface. At the top, there are navigation links for 'ABOUT', 'TUTORIAL', and 'CONTACT'. The main header area includes the ZB MED logo and a brief description of the service, which includes 69,164 COVID-19 related preprints. Below this, there are search options like 'Query builder', 'Expert Search', and 'Help'. A search bar contains the term 'Multi'. A dropdown menu for MESH terminology is open, showing a list of terms related to COVID-19, such as 'Disease, COVID-19 Virus', 'Infection, SARS-CoV-2', and 'COVID-19'. The search results section shows a bar chart for 'Publication Date' and a list of documents. One document is highlighted with a yellow background, showing its title, authors, and date. The interface also features a 'Reset' button and a 'Search' button.

access:

<https://preview.zbmed.de>



# Anwendung & Integration von Terminologiediensten

## Erhöhte Benutzerfreundlichkeit - preVIEW

The screenshot displays the preVIEW: COVID-19 web application. At the top, there is a navigation bar with 'preVIEW: COVID-19', 'ABOUT', 'TUTORIAL', and 'CONTACT'. Below this, a banner for ZB MED (Informationszentrum Lebenswissenschaften) provides an overview of the service, including the number of preprints (69,164) and a citation notice. The main interface features a 'Query builder' section with a search box containing 'Multi' and a 'Reset' button. A bar chart on the left shows the 'Publication Date' of documents from Dec 21 to Mar 23. The search results section shows 'Refine your search. Currently 69.164 documents are matched' and a list of results, including a highlighted entry: 'Molecular Pathways Disturbances during COVID-19 Lead to Cardiac Myocardial Injury'. Two concept information panels are overlaid on the right side. The first panel, for MESH D000086382, lists alternative names such as 'Disease, COVID-19 Virus', 'Infection, SARS-CoV-2', and 'COVID-19'. The second panel, for MESH D012723, provides a definition of 'Sex' as 'The totality of characteristics of reproductive structure, functions, PHENOTYPE, and GENOTYPE, differentiating the MALE from the FEMALE organism.' and lists alternative names like 'Geschlecht (DE)', 'Sex, Phenotypic', and 'Genotypic Sex'.

access:

<https://preview.zbmed.de>



# Anwendung & Integration von Terminologiediensten

## Erhöhte Benutzerfreundlichkeit - preVIEW

The screenshot displays the preVIEW: COVID-19 interface. At the top, there are navigation links for 'ABOUT', 'TUTORIAL', and 'CONTACT'. The main header includes the ZB MED logo and a description of the preprint viewer. Below this, there are search options like 'Query builder', 'Expert Search', and 'Help'. A search bar contains the text 'Multi' and a 'Reset' button. A 'Publication Date' filter is visible with a bar chart showing 1,400 results. The search results section shows a list of terms with their corresponding terminologies and IDs:

- diabetes mellitus (EFO) > EFO\_0000400
- diabetes mellitus type 2 associated cataract (EFO) > EFO\_0004596
- Diabetes Insipidus (MESH) > D003919
- Diabetes Mellitus (MESH) > D003920
- Diabetes Insipidus, Neurogenic (MESH) > D020790
- Diabetes Complications (MESH) > D048909
- Diabetes Insipidus, Nephrogenic (MESH) > D018500

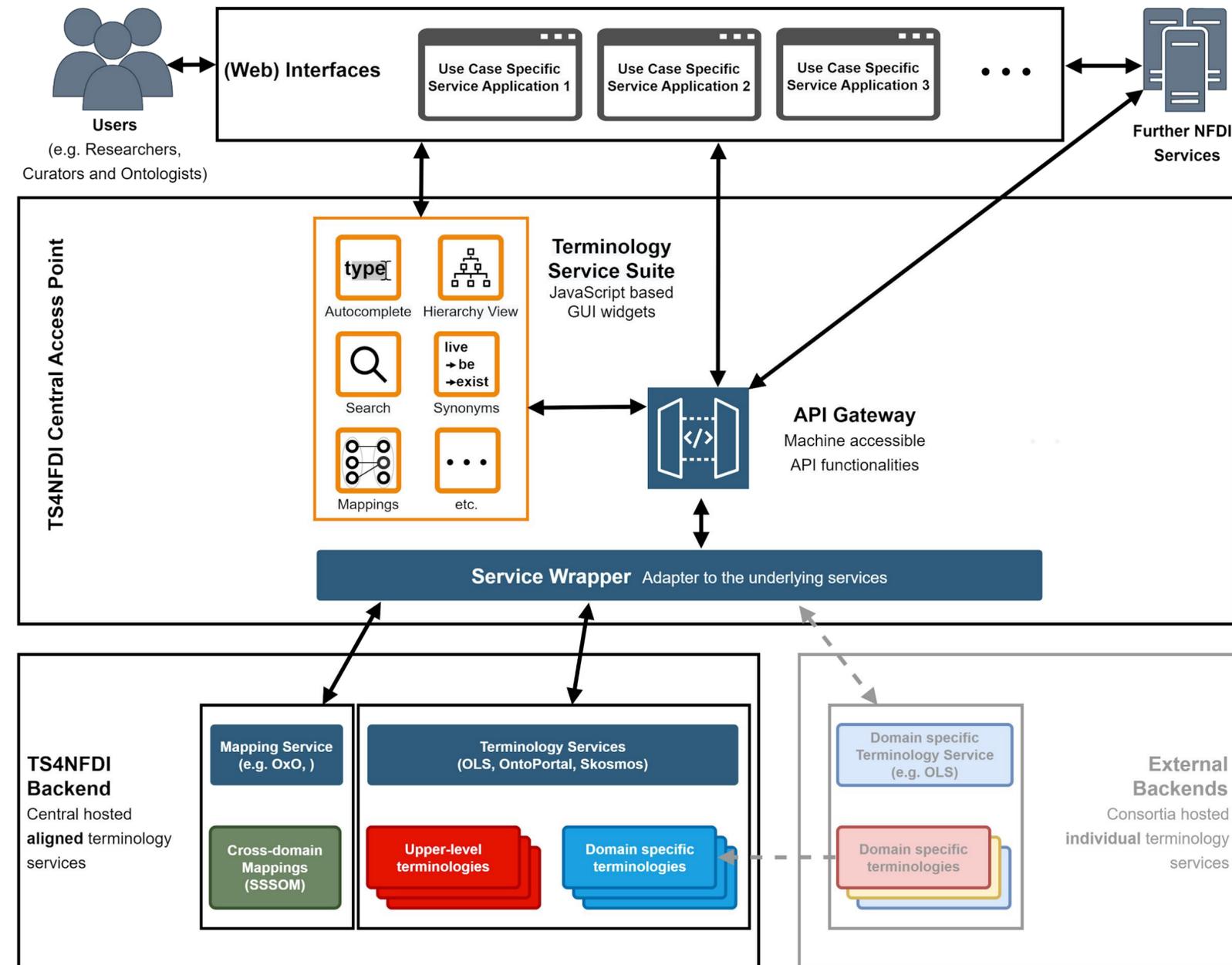
Two concept information panels are highlighted with blue boxes:

- COVID-19 (MESH D000086382):**
  - URL: <http://purl.bioontology.org/ontology/MESH/D000086382>
  - Alternative Names: Disease, COVID-19 Virus; Infection, SARS-CoV-2; COVID19; Virus Infection, COVID-19; SARS CoV 2 Infection; COVID-19 Virus Infection; Infection, COVID-19 Virus; COVID-19 Virus Infections; SARS-CoV-2 Infections; COVID 19 Virus Infection; SARS-CoV-2 Infection; SARS Coronavirus 2 Infection; COVID 19.
- Sex (MESH D012723):**
  - URL: <http://purl.bioontology.org/ontology/MESH/D012723>
  - Definition: The totality of characteristics of reproductive structure, functions, PHENOTYPE, and GENOTYPE, differentiating the MALE from the FEMALE organism.
  - Alternative Names: Geschlecht (DE); Sex, Phenotypic; Genotypic Sex; Genus (DE); Phenotypic Sex; Sex, Genotypic.

At the bottom, there is a QR code and the URL <https://preview.zbmed.de>.

# Anwendung & Integration von Terminologiediensten

## Terminology Service Suite

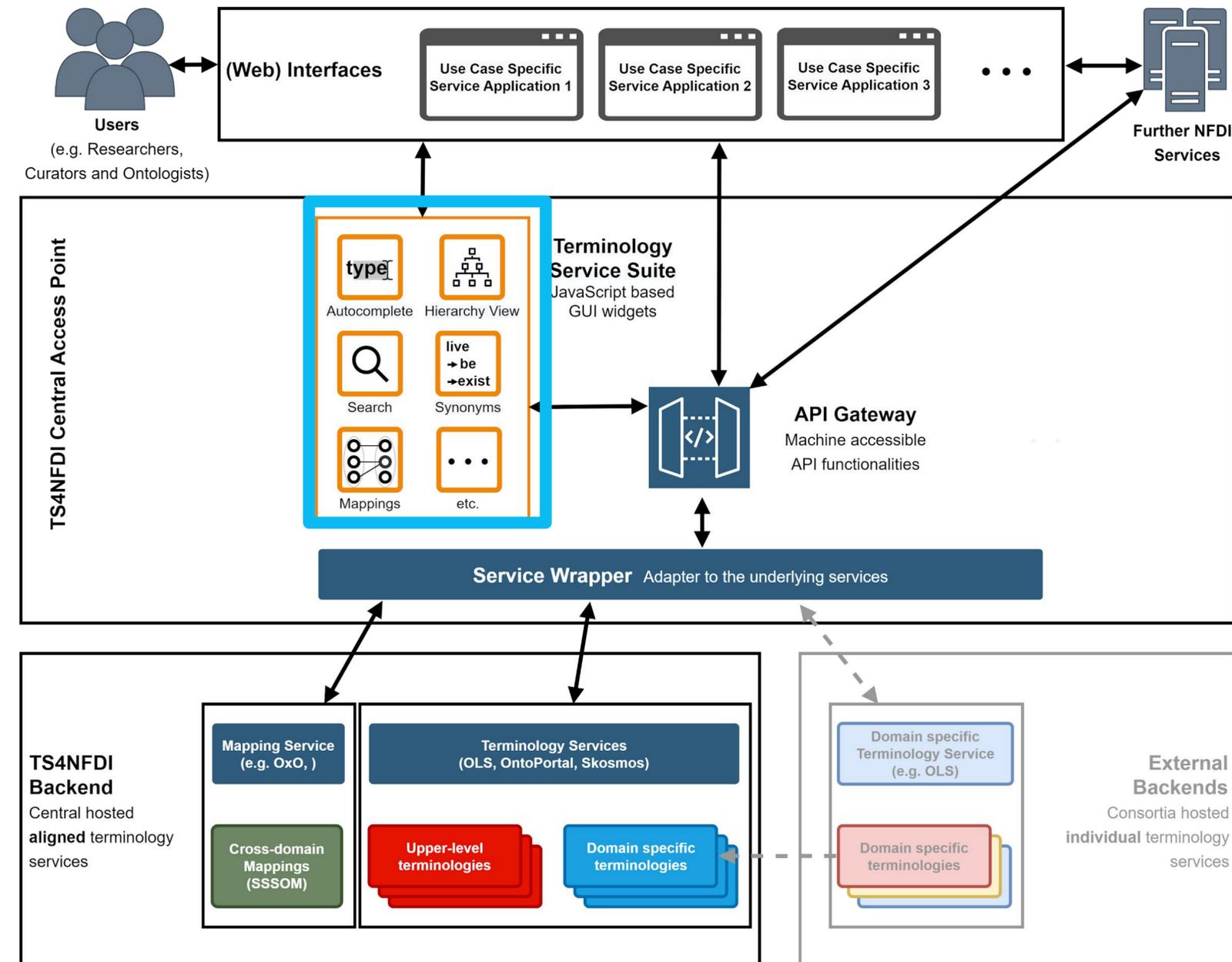


access: <https://t.ly/Aad7->



# Anwendung & Integration von Terminologiediensten

## Terminology Service Suite



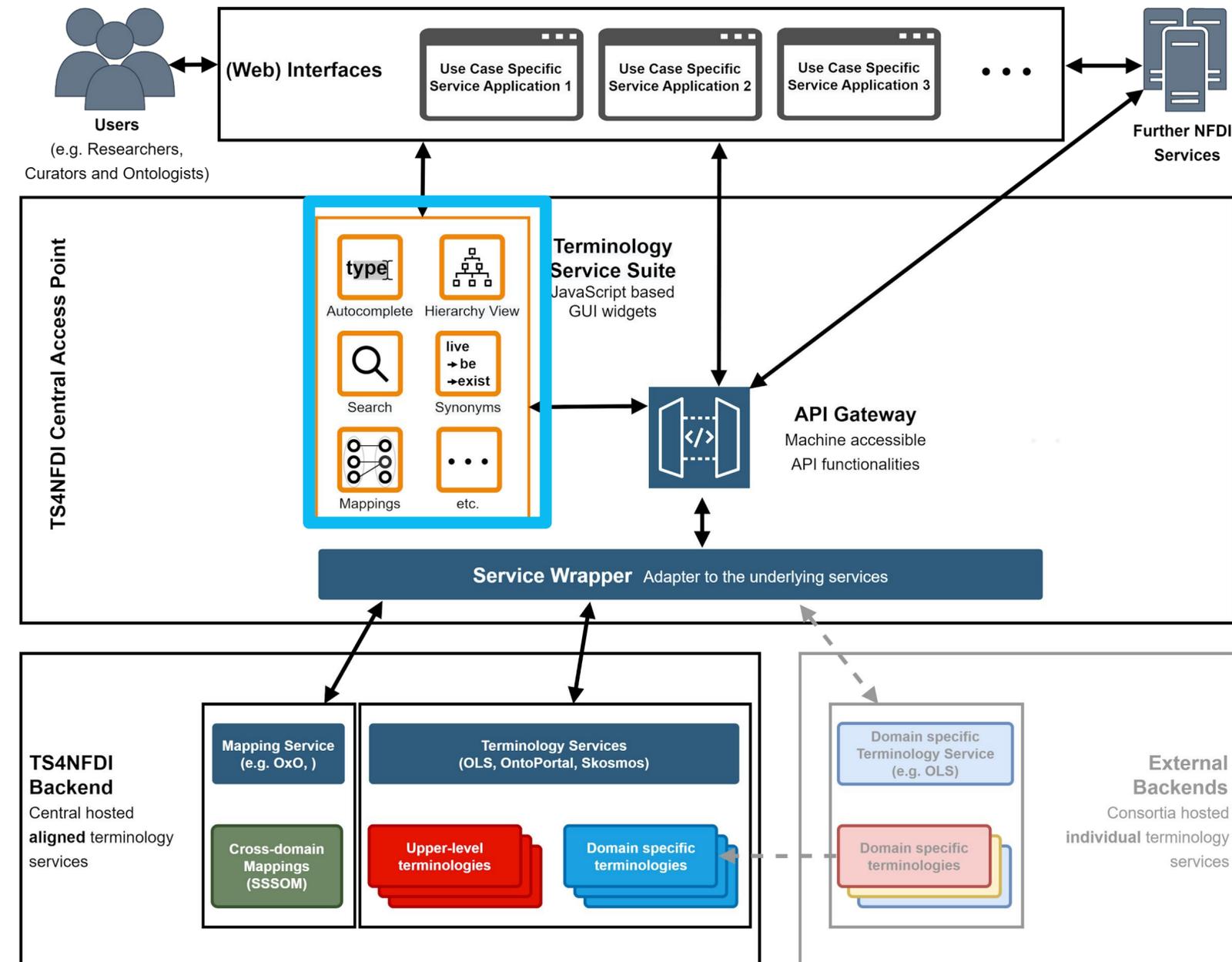
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# Anwendung & Integration von Terminologiediensten

## Terminology Service Suite

- Startpunkt für die JavaScript basierten Widgets:  
React basierten Widgets von **SemLookP**



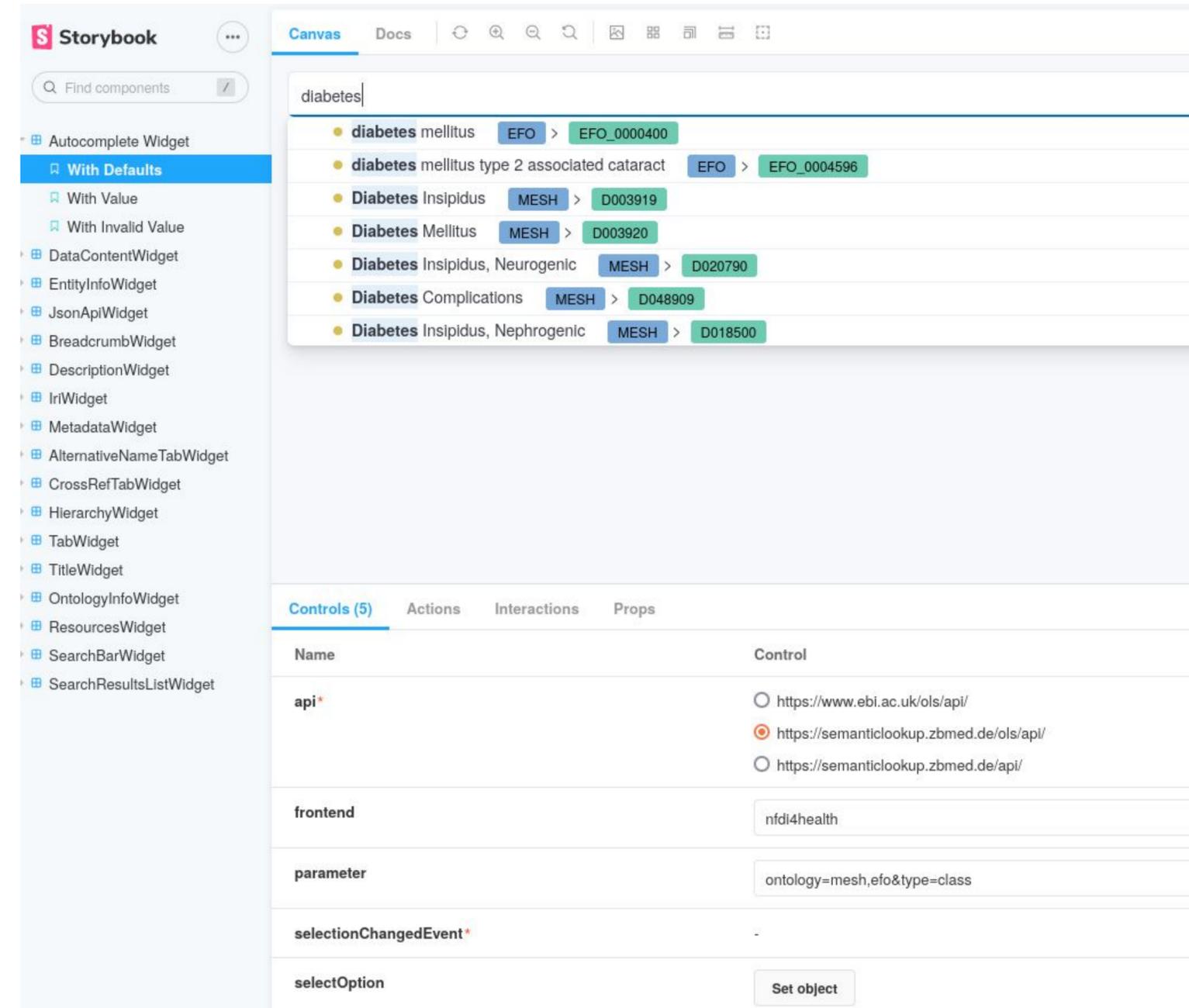
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# Anwendung & Integration von Terminologiediensten

## Terminology Service Suite

- Startpunkt für die JavaScript basierten Widgets:  
React basierten Widgets von **SemLookP**



The screenshot shows the Storybook interface for the SemLookP widget. The search input contains 'diabetes'. The results list includes:

- diabetes mellitus (EFO) > EFO\_0000400
- diabetes mellitus type 2 associated cataract (EFO) > EFO\_0004596
- Diabetes Insipidus (MESH) > D003919
- Diabetes Mellitus (MESH) > D003920
- Diabetes Insipidus, Neurogenic (MESH) > D020790
- Diabetes Complications (MESH) > D048909
- Diabetes Insipidus, Nephrogenic (MESH) > D018500

The 'Controls (5)' panel is active, showing the following configuration options:

Name	Control
api*	<input type="radio"/> https://www.ebi.ac.uk/ols/api/ <input checked="" type="radio"/> https://semanticlookup.zbmed.de/ols/api/ <input type="radio"/> https://semanticlookup.zbmed.de/api/
frontend	<input type="text" value="nfdi4health"/>
parameter	<input type="text" value="ontology=mesh,efo&amp;type=class"/>
selectionChangedEvent*	-
selectOption	<input type="button" value="Set object"/>

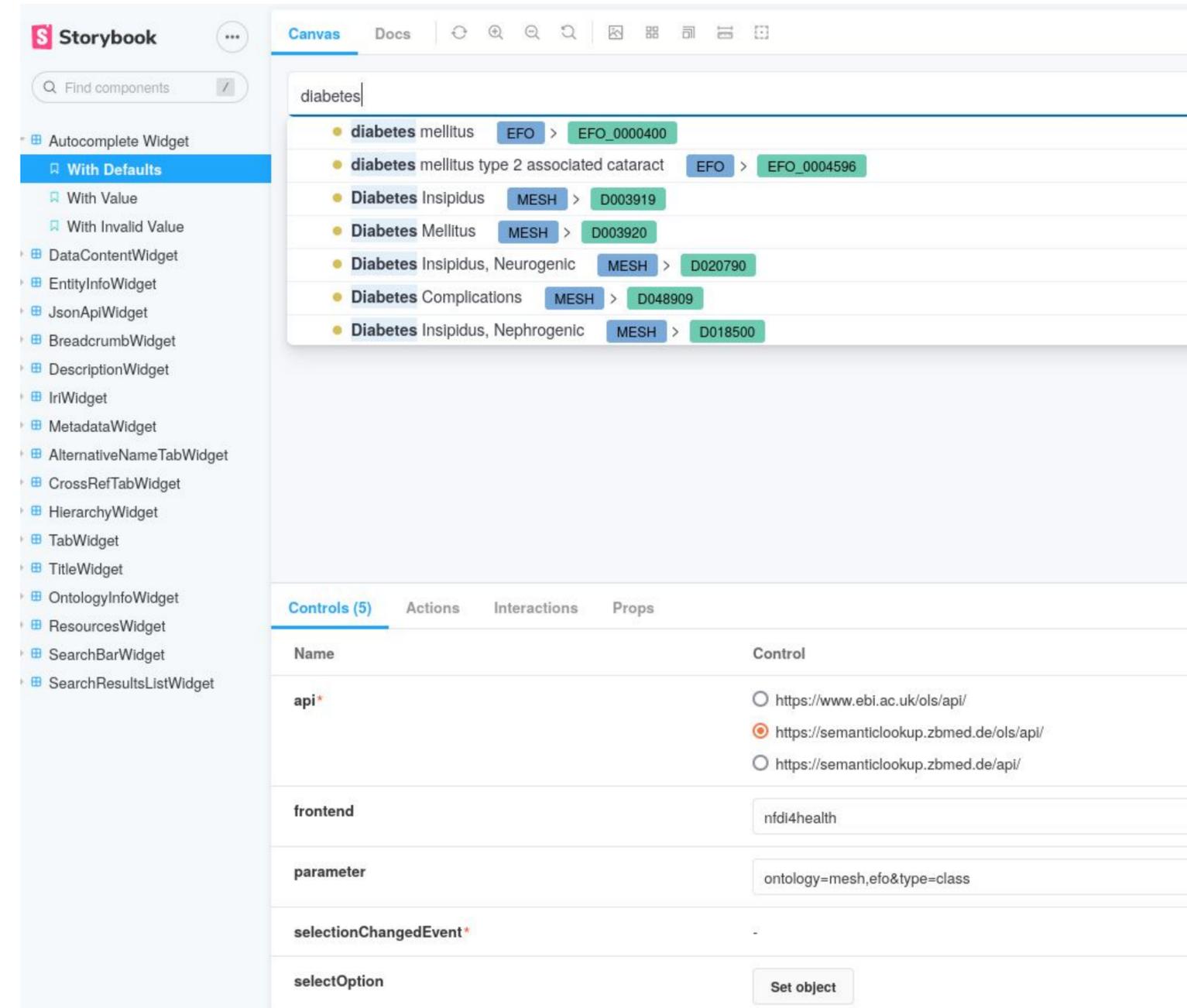
access: <https://t.ly/Aad7->



# Anwendung & Integration von Terminologiediensten

## Terminology Service Suite

- Startpunkt für die JavaScript basierten Widgets:  
React basierten Widgets von **SemLookP**
- Ein Widget nutzt Daten einer API und kombiniert diese mit HTML Komponenten



The screenshot shows a Storybook interface for a search widget. The search input contains 'diabetes'. The results list includes:

- diabetes mellitus (EFO) > EFO\_0000400
- diabetes mellitus type 2 associated cataract (EFO) > EFO\_0004596
- Diabetes Insipidus (MESH) > D003919
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The control panel below shows the following configuration:

Name	Control
api*	<input type="radio"/> https://www.ebi.ac.uk/ols/api/ <input checked="" type="radio"/> https://semanticlookup.zbmed.de/ols/api/ <input type="radio"/> https://semanticlookup.zbmed.de/api/
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selectOption	<input type="button" value="Set object"/>

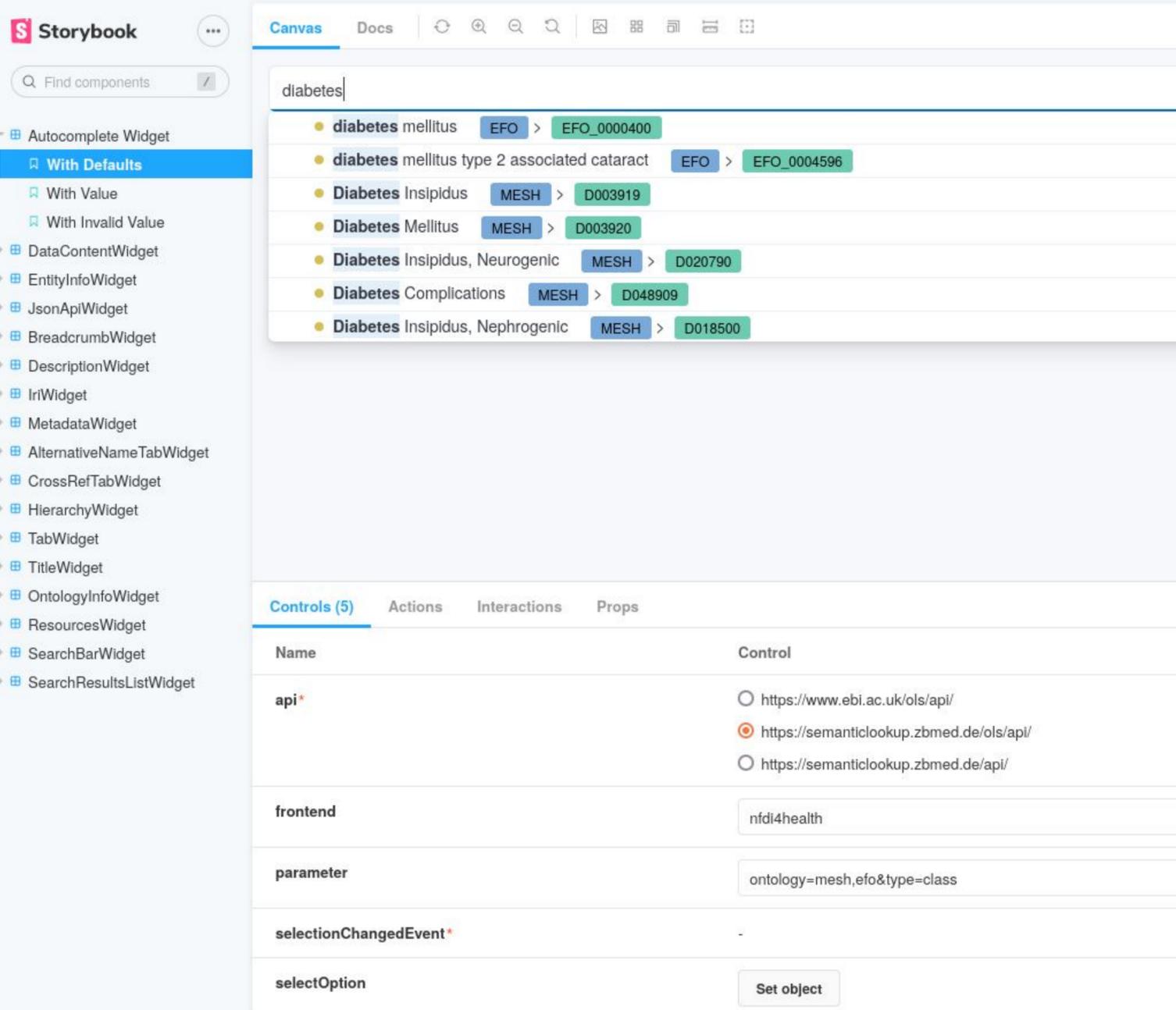
access: <https://t.ly/Aad7->



# Anwendung & Integration von Terminologiediensten

## Terminology Service Suite

- Startpunkt für die JavaScript basierten Widgets:  
React basierten Widgets von **SemLookP**
- Ein Widget nutzt Daten einer API und kombiniert diese mit HTML Komponenten
- GitHub:  
<https://github.com/ts4nfdi/terminology-service-suite>



The screenshot shows a Storybook interface for a search widget. The search input contains 'diabetes'. The results list includes:

- diabetes mellitus (EFO) > EFO\_0000400
- diabetes mellitus type 2 associated cataract (EFO) > EFO\_0004596
- Diabetes Insipidus (MESH) > D003919
- Diabetes Mellitus (MESH) > D003920
- Diabetes Insipidus, Neurogenic (MESH) > D020790
- Diabetes Complications (MESH) > D048909
- Diabetes Insipidus, Nephrogenic (MESH) > D018500

The control panel below shows the following settings:

Name	Control
api*	<input type="radio"/> https://www.ebi.ac.uk/ols/api/ <input checked="" type="radio"/> https://semanticlookup.zbmed.de/ols/api/ <input type="radio"/> https://semanticlookup.zbmed.de/api/
frontend	<input type="text" value="nfdi4health"/>
parameter	<input type="text" value="ontology=mesh,efo&amp;type=class"/>
selectionChangedEvent*	-
selectOption	<input type="button" value="Set object"/>

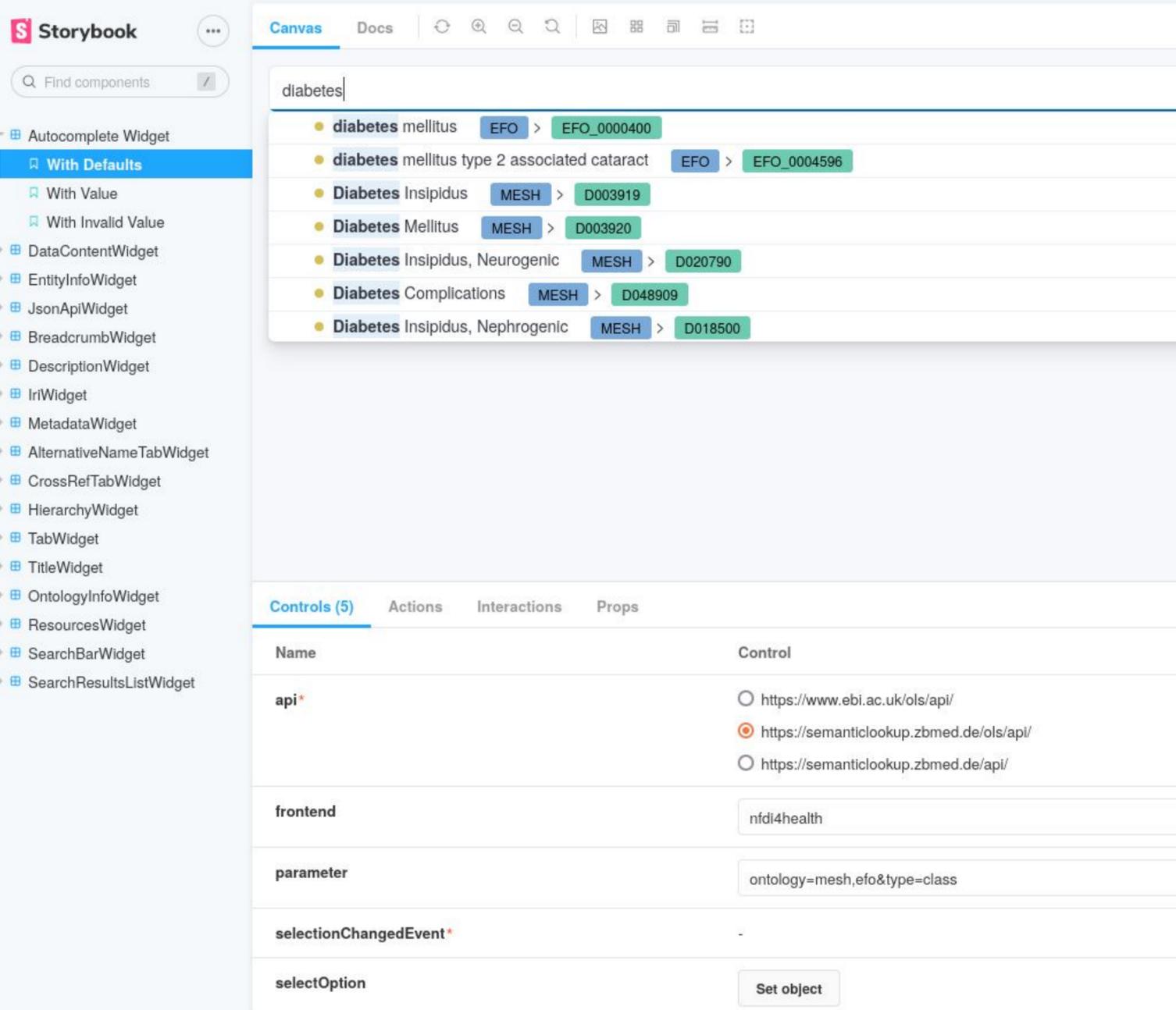
access: <https://t.ly/Aad7->



# Anwendung & Integration von Terminologiediensten

## Terminology Service Suite

- Gebotene Funktionalitäten durch die Architektur:



The screenshot shows a Storybook interface with a search bar containing 'diabetes'. Below the search bar, a list of search results is displayed, each with a yellow dot, a text label, and a colored button with an ontology ID. The results are:

- diabetes mellitus (EFO) > EFO\_0000400
- diabetes mellitus type 2 associated cataract (EFO) > EFO\_0004596
- Diabetes Insipidus (MESH) > D003919
- Diabetes Mellitus (MESH) > D003920
- Diabetes Insipidus, Neurogenic (MESH) > D020790
- Diabetes Complications (MESH) > D048909
- Diabetes Insipidus, Nephrogenic (MESH) > D018500

Below the search results, there is a 'Controls (5)' section with a table of control properties:

Name	Control
api*	<input type="radio"/> https://www.ebi.ac.uk/ols/api/ <input checked="" type="radio"/> https://semanticlookup.zbmed.de/ols/api/ <input type="radio"/> https://semanticlookup.zbmed.de/api/
frontend	<input type="text" value="nfdi4health"/>
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selectionChangedEvent*	-
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access: <https://t.ly/Aad7->



# Anwendung & Integration von Terminologiediensten

## Terminology Service Suite

- Gebotene Funktionalitäten durch die Architektur:
  - Kombination div. Terminologien (Iconclass, Getty, DNB, ...)

Name	Control
api*	<input type="radio"/> https://www.ebi.ac.uk/ols/api/ <input checked="" type="radio"/> https://semanticlookup.zbmed.de/ols/api/ <input type="radio"/> https://semanticlookup.zbmed.de/api/
frontend	<input type="text" value="nfdi4health"/>
parameter	<input type="text" value="ontology=mesh,efo&amp;type=class"/>
selectionChangedEvent*	-
selectOption	<input type="button" value="Set object"/>

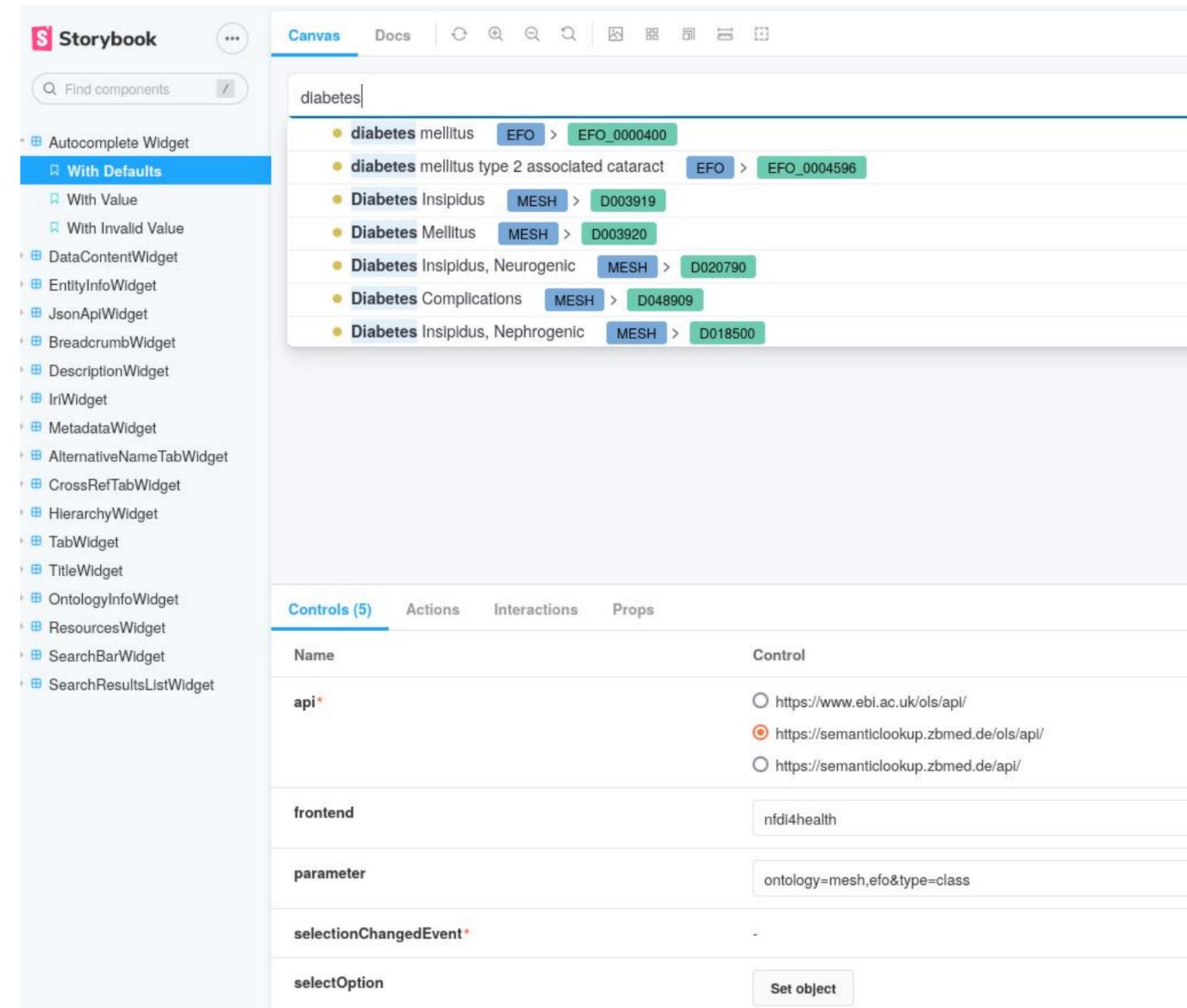
access: <https://t.ly/Aad7->



# Anwendung & Integration von Terminologiediensten

## Terminology Service Suite

- Gebotene Funktionalitäten durch die Architektur:
  - Kombination div. Terminologien (Iconclass, Getty, DNB, ...)
  - Versionierung



The screenshot shows the Storybook interface for a search component. The search input contains 'diabetes'. The results list includes:

- diabetes mellitus (EFO) > EFO\_0000400
- diabetes mellitus type 2 associated cataract (EFO) > EFO\_0004596
- Diabetes Insipidus (MESH) > D003919
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The 'Controls (5)' panel shows the following configuration options:

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api*	<input type="radio"/> https://www.ebi.ac.uk/ols/api/ <input checked="" type="radio"/> https://semanticlookup.zbmed.de/ols/api/ <input type="radio"/> https://semanticlookup.zbmed.de/api/
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selectionChangedEvent*	-
selectOption	<input type="button" value="Set object"/>

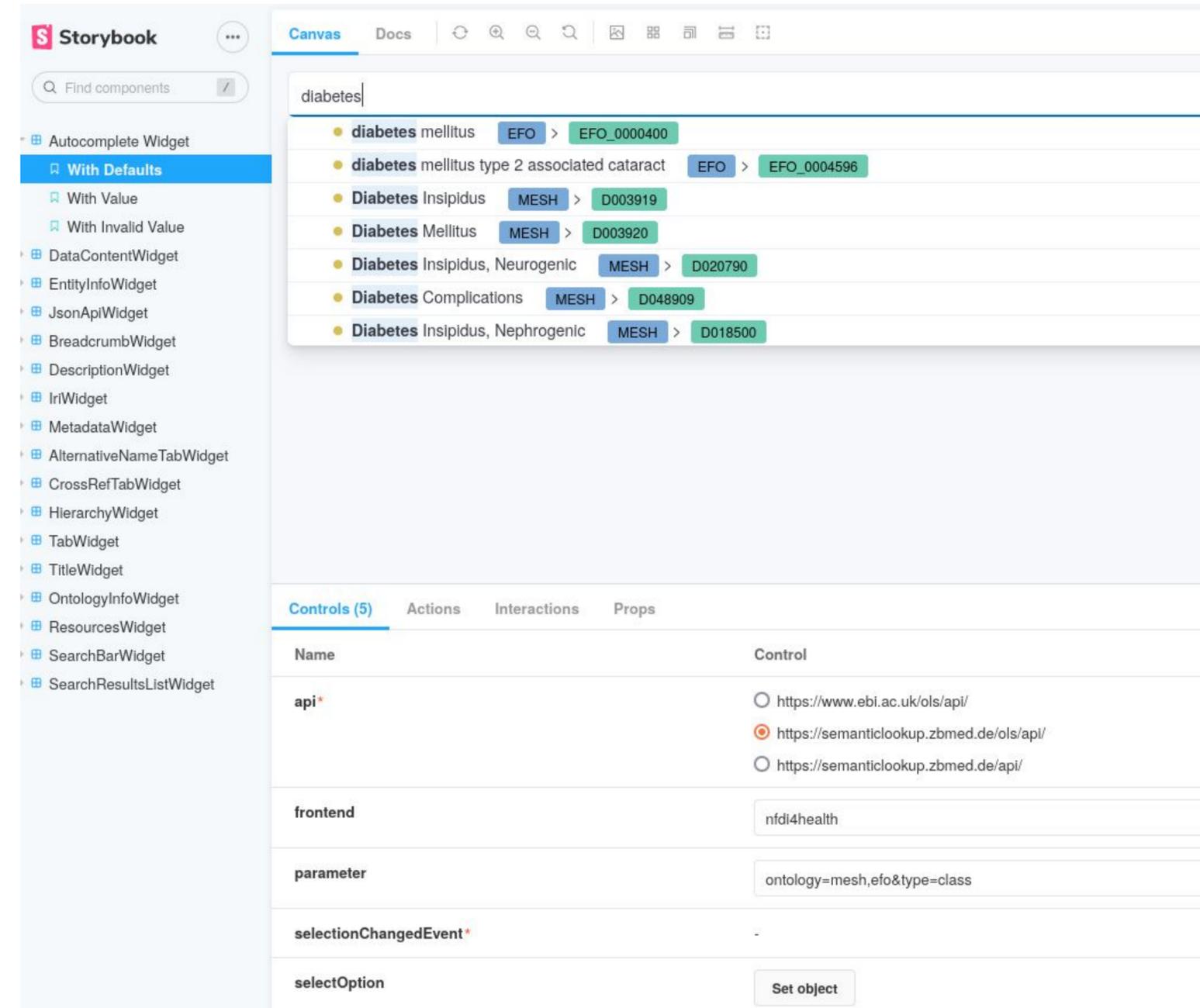
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# Anwendung & Integration von Terminologiediensten

## Terminology Service Suite

- Gebotene Funktionalitäten durch die Architektur:
  - Kombination div. Terminologien (Iconclass, Getty, DNB, ...)
  - Versionierung
  - Multilingual



The screenshot shows the Storybook interface for a search component. The search input contains 'diabetes'. The results list includes:

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The 'Controls (5)' panel contains the following table:

Name	Control
api*	<input type="radio"/> https://www.ebi.ac.uk/ols/api/ <input checked="" type="radio"/> https://semanticlookup.zbmed.de/ols/api/ <input type="radio"/> https://semanticlookup.zbmed.de/api/
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selectionChangeEvent*	-
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# Anwendung & Integration von Terminologiediensten

## Terminology Service Suite

- Gebotene Funktionalitäten durch die Architektur:
  - Kombination div. Terminologien (Iconclass, Getty, DNB, ...)
  - Versionierung
  - Multilingual
  - Konfigurierbar

Name	Control
api*	<input type="radio"/> https://www.ebi.ac.uk/ols/api/ <input checked="" type="radio"/> https://semanticlookup.zbmed.de/ols/api/ <input type="radio"/> https://semanticlookup.zbmed.de/api/
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# Anwendung & Integration von Terminologiediensten

## Nutzung von Terminologiediensten in den NFDI Domänen

- diverse NFDI Konsortien bieten (Service) Anwendungen in ihrer Domäne an, die die Widgets integrieren könnten

# Anwendung & Integration von Terminologiediensten

## Nutzung von Terminologiediensten in den NFDI Domänen

consortia	service	description of the service
NFDI4Health	preVIEW	preprint viewer for COVID-19 related articles
NFDI4Health	Annotation workbench	The service aims to assist researchers with semantic annotation of data dictionaries, questionnaires or other data collection instruments.
NFDI4Health	German Central Health Study Hub	The Study Hub NFDI4Health is an inventory of German studies covering structured health data from administrative databases, clinical trials incl. vaccination studies, primary care, epidemiological studies, and public health surveillance. The aim is to enable findability of studies and access to structured health data to improve the management of public health data.
NFDI4Biodiversity	GFBio Dataportal	
DataPLANT (NFDI4Plants)	Swate and Swobup	To assist fundamental plant researchers with annotating their data with the relevant metadata as early within the experimental timeline as possible. Contains a collection of relevant ontologies as well as templates already containing metadata headings necessary for minimum information standards as well as endpoint repositories. Contains the DPBO, an ontology designed to help fill the ontology gap.
DataPLANT/NFDI4BIOIMAGE	Swate & OMERO	A sub-use case of the above "Swate and Swobup" use case -- the two projects are investigating using the ARC format for synchronizing data from/to OMERO.
Biodiversity Digital Twin (SNG, WP5)	Mapping service	tbc
NFDI4DataScience (primarily)	Open Research Knowledge Graph (ORKG)	The ORKG is an infrastructure for the production, curation and use of machine-actionable (FAIR) scientific knowledge, traditionally published in the scientific literature. Its mission is to shape a future scholarly publishing and communication where the contents of scholarly articles are FAIR research data.
NFDI4Objects	Cocoda	Web application to create and manage mappings between terminologies
NFDI4BIOIMAGE	Adamant	Web application to create structured documentations of experiments following a given schema or creating a schema from scratch
non-NFDI (de.NBI / LIFS)	mztab-M Editor	Web application to create <a href="#">mzTab-M</a> submission files from XLSX tables in row or column oriented formats with additional, semantic annotation of data elements.
NFDI4Chem	Chemotion ELN	An electronic laboratory notebook designed for scientists.

- diverse NFDI Konsortien bieten (Service) Anwendungen in ihrer Domäne an, die die Widgets integrieren könnten
- **Usage of terminology services @NFDI**
- Übersicht in einer Tabelle

access: <https://t.ly/ilzxe>



# Anwendung & Integration von Terminologiediensten

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- diverse NFDI Konsortien bieten (Service) Anwendungen in ihrer Domäne an, die die Widgets integrieren könnten
- **Usage of terminology services @NFDI**
  - Übersicht in einer Tabelle
  - Das Hinzufügen von Diensten ist explizit erwünscht!

access: <https://t.ly/ilzxe>



# Basisdienst: TS4NFDI

## Weitere Informationen

- Terminology **S**ervices **4** NFDI
- Beantragung der Integrationsphase

### TS4NFDI



#### Terminology Services

Initialization Phase

Supported by: NFDI Section Metadata, Terminologies, Provenance

#### What does it do?

Terminology Services 4 NFDI (TS4NFDI) is a cross domain service for the provision, curation, development, harmonization and mapping of terminologies. It aims to facilitate consensus-building and interoperability of services across disciplines to achieve a shared knowledge representation and knowledge engineering framework. The service seeks to integrate and converge individual solutions into a standardized, interoperable, and sustainable service suite with Service Wrapper, API Gateway, mapping service and reusable GUI widgets.

#### Goals of the Initialization phase

Currently TS4NFDI is in the initialization phase with the following goals: to create a set of services in use – development of a consistent terminology

**access: <https://terminology.services.base4nfdi.de/>**

### TS4NFDI Team



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# Basisdienst: TS4NFDI

## Weitere Informationen

- Terminology **S**ervices **4** NFDI
- Beantragung der Integrationsphase
- Teilnahme an der Base User Conference

### TS4NFDI



#### Terminology Services

Initialization Phase

Supported by: NFDI Section Metadata, Terminologies, Provenance

#### What does it do?

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### TS4NFDI Team



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access: <https://terminology.services.base4nfdi.de/>

# Basisdienst: TS4NFDI

## Weitere Informationen

- Terminology **Services 4 NFDI**
- Beantragung der Integrationsphase
- Teilnahme

### TS4NFDI

#### Base User Conference 2024

weitere Infos:

<https://events.gwdg.de/event/658/overview>



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Currently TS4NFDI is in the initialization phase with the following goals: to create a set of standardized services in use – development of a shared terminology

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#### TS4NFDI Team



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Informatik (InfAI) e.V.  
NFDI4Biodiversity

karam[a]infai.org

# Basisdienst: TS4NFDI

## Weitere Informationen

- Terminology **S**ervices **4** NFDI
- Beantragung der Integrationsphase
- Teilnahme an der Base User Conference
- kontaktiert uns:
  - mail: [ts4nfdi@lists.nfdi.de](mailto:ts4nfdi@lists.nfdi.de)

access: <https://terminology.services.base4nfdi.de/>

The screenshot shows the 'base4nfdi' website with a search bar and navigation menu (Home, Process, Projects, People). The 'Projects' tab is active, displaying the 'TS4NFDI' project. The project description includes: 'Terminology Services Initialization Phase', supported by 'NFDI Section Metadata, Terminologies, Provenance'. It details the project's goals: 'to create a set of services in use - development of a consistent terminology'. The 'TS4NFDI Team' section lists three members: Oliver Koepler (TIB Leibniz Information Centre, NFDI4Chem, oliver.koepler@tib.eu), Roman Baum (ZB MED - Information Centre for Life Sciences, NFDI4Health, FAIRagro, baum@zbmed.de), and Naouel Karam (Institut für Angewandte Informatik (InfAI) e.V., NFDI4Biodiversity, karam@infai.org).

# Basisdienst: TS4NFDI

## Weitere Informationen

- Terminology **Services 4 NFDI**

- Beantragung der Integrationsphase

- Teilnahme

- kontaktier

- mail: [ts4nfdi@lists.nfdi.de](mailto:ts4nfdi@lists.nfdi.de)

**Link zu den Folien**

<https://doi.org/10.5281/zenodo.13830940>

**access:** <https://terminology.services.base4nfdi.de/>

**base4nfdi** Basic Services for NFDI

Search

Home Process **Projects** People **PROPOSE TO US!**

### TS4NFDI

**Link zu den Folien**

<https://doi.org/10.5281/zenodo.13830940>



Terminology Services 4 NFDI (TS4NFDI) is a cross domain service for the provision, curation, development, harmonization and mapping of terminologies. It aims to facilitate consensus-building and interoperability of services across disciplines to achieve a shared knowledge representation and knowledge engineering framework. The service seeks to integrate and converge individual solutions into a standardized, interoperable, and sustainable service suite with Service Wrapper, API Gateway, mapping service and reusable GUI widgets.

#### Goals of the Initialization phase

Currently TS4NFDI is in the initialization phase with the following goals: to create a set of standardized services in use – development of a shared terminology

#### TS4NFDI Team

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