

RESEARCH DATA MANAGEMENT -INTRODUCTION TO FAIR AND OPEN DATA

Jochen APEL (Heidelberg University) Paola GALIMBERTI (University of Milan) Milan JANÍČEK (Charles University, Prague)

Open for you! An introduction series to open science | 7 March 2022









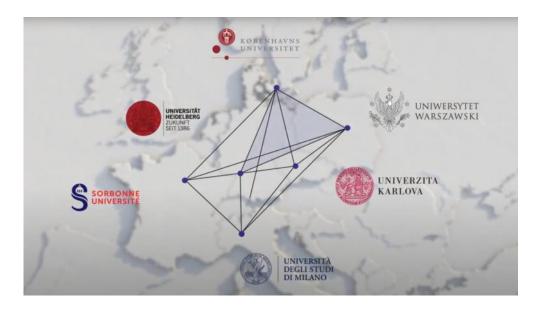






4EU+ Alliance and Open Science

- 4EU+ is a transnational strategic university association.
- Aim: Strengthen the European vision of deepened cooperation and mutual enrichment in research and teaching
- Open Science is an integral part of this.
- Two 4EU+ projects currently work on Open Science.
- Open for you an Introduction Series to Open Science" – 14 session on OS topics!





Agenda

- Introduction
- Why bother with FAIR Data?
- Why bother with Open Data?
- Good practices: a closer look on various data repositories
 - Subject-specific repositories
 - Generic Repositories
 - Institutional Repositories



What we will talk about?

"An article [...] in a scientific publication is not the scholarship itself, it is merely advertising of the scholarship." Buckheit, Jonathan B., and David L. Donoho. "WaveLab and Reproducible Research." In *Wavelets and Statistics*, edited by Anestis Antoniadis and Georges Oppenheim, 55–81. Lecture Notes in Statistics. New York, NY: Springer, 1995. <u>https://doi.org/10.1007/978-1-4612-2544-75</u>.



	Publications	
Notes Databases Vic Feedl	Interviews Annotations Methods Bibliographic references VIsualizations Corpora back Experimental data	Images

The tip of the iceberg



What is research data?



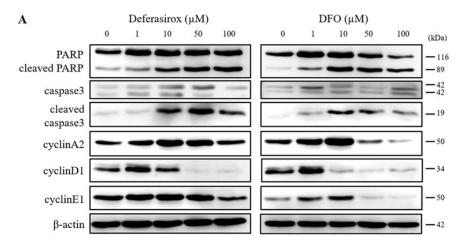
Is this data?

e <u>1</u> 29	7 4 2 1 7 4 2	BUFFETTI Mod. 5611
31 30	TAA.71.S.14 Giara (?)	9 8 (
4 32	Superficie	88 - (
33	Montagnola	88 0 (
2 t 35 34	Framm. orlo	88 78
36	Tecn.: a mano	a 8 • (
37	Cer.: arg. omog. rsmrrnc. ch. incl. min. p. nr. f.m.	0 01
2 1 39 38	cott. m., grana med. comp. sup	83 - (
40	Dec.:	8 8 C
42 41	Per.:	80 ~ (
43 4	Int.strat.:	4 (7 9 7 8
4 44	Bibl.:	3 - (
46 45	14 13 17 11 10 68 61 62 64 63 65 61 60 28 28 21 26 22 24 23 25 21 20 48 43 41	78 0

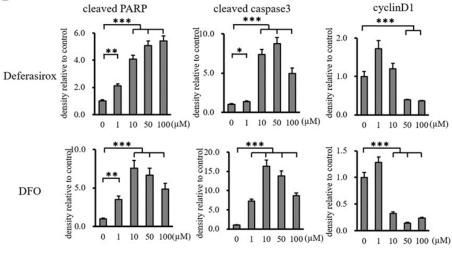
7



Is this data?



В





Is this data?

+	Create	Data Code (4) Discussion (2) Activity Metadata		_	Download (103 kB)	New Notebook	:
Ø	Home	Vietnam_COVID-19_Hospital	Detail Compact C	Column			10 of 30 columns	
Φ	Competitions	Vietnam_province_info.csv	▲ ID =	▲ Gender =	# Age =	▲ Nationality =	▲ Detection Location =	A
	Datasets			F 55%	1 1 1	Vietnam 82%	Hanoi 39%	н
<>	Code		288 unique values	M 45%		United Kingdom 7%	Ho Chi Minh City 19%	H
	Discussions				0.25 88	Other (30) 10%	Other (120) 42%	0
			BN1	м	66	China	Ho Chi Minh City	Hc
9	Courses		BN2	М	28	China	Ho Chi Minh City	He
\sim	More		BN3	F	25	Vietnam	Thanh Hoa	Tł
			BN4	М	29	Vietnam	Vinh Phuc	Vi
			BN5	F	23	Vietnam	Vinh Phuc	Vi
			BN6	F	25	Vietnam	Khanh Hoa	Kł



What is research data?

Any information that has been

collected,

observed,

generated,

created

to validate original research findings

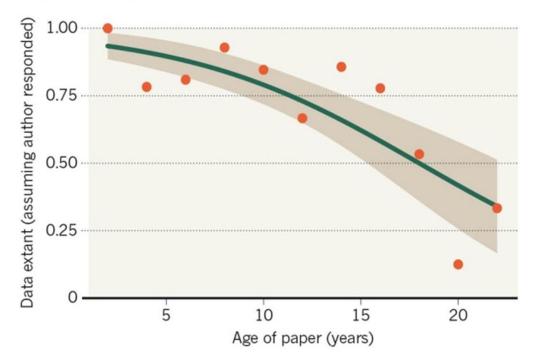
Research data is a very important resource, so we must ensure that it can be reused, first and foremost by ourselves.



Data can be missed

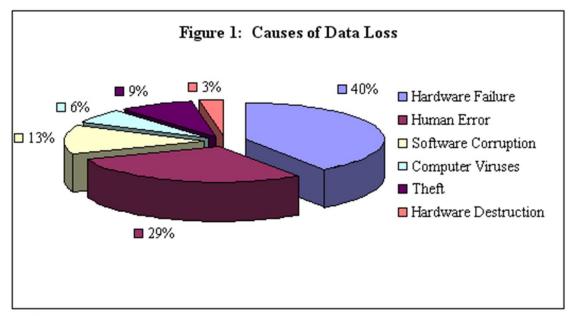
MISSING DATA

As research articles age, the odds of their raw data being extant drop dramatically.





Data can get lost



Source: Author's estimates based on data from Safeware, The Insurance Agency, Inc., "2000 Safeware Loss Study," 2001; and ONTRACK Data International, Inc., "Understanding Data Loss," 2003.



Data can be manipulated or altered

Paul Jump, A Star's Collapse.Dutch begin documenting and trying to explain top psychologist's massive fraud. Times Higher Education, November 28, 2011

58 articles published by Diederik Stapel were withdrawn because they were based on invented data. His papers had been published in scientific journals considered prestigious (very high IFs!). Following reports from three doctoral students, the Dutch university for which he worked had started an investigation. Stapel then admitted that he had fabricated the data on numerous occasions. If he had shared his data before, he probably wouldn't have been able to fabricate fakes for so long.

This case led the Netherlands become one of the pioneer countries in Open Science policy and practices



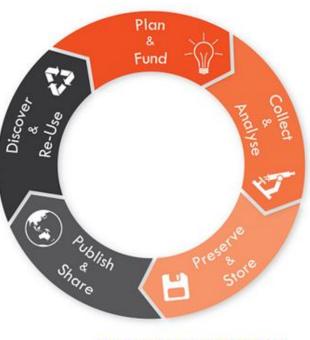
These problems can be partially solved through responsible research data management



Research Data Management to the resc

"Research data management concerns the organisation of data, from its entry to the research cycle through to the dissemination and archiving of valuable results. It aims to ensure reliable verification of results, and permits new and innovative research built on existing information."

(Whyte, A., Tedds, J. (2011). <u>'Making the Case for Research Data Management</u>'. DCC Briefing Papers. Edinburgh: Digital Curation Centre.)



https://library.sydney.edu.au/research/datamanagement/research-data-management.html



The research infrastructure for language as social and cultural data

CLARIN is a digital infrastructure offering data, tools and services to support research based on language resources.

RDM applies to all disciplines including HSS



Funders are pushing RDM & Open Data - European level



Horizon 2020 & Horizon Europe: FAIR Data Management

- Participating projects will be required to develop a **Data Management Plan** (DMP)
- Participating projects are **required to deposit research data**, preferably into a research data repository
- "[...]as far as possible, projects must then **take measures to enable for third parties to access**, mine, exploit, reproduce and disseminate (free of charge for any user) this research data."

Guidelines on Open Access to Scientific Publications and Research Data in Horizon 2020 Guidelines on Data Management in Horizon 2020



Funders are pushing RDM & Open Data - example for a national funder



DFG Guidelines on the Handling of Research Data

"[...] Assuming that the publication of research data from a DFG-funded project does not conflict with the rights of third parties (in particular data protection or copyright), **research data should be made available as soon as possible.**

[…]

Applicants may request funding for project-specific costs that arise in connection with a scientific project, for the preparation of research data for subsequent reuse and/or the transfer of research data to existing infrastructures as part of a proposal to the DFG. [...]"



The National Recovery and Resilience Plan



Coerentemente con le finalità del presente Avviso, ai risultati del Programma di ricerca e ai relativi dati (ad esempio, le pubblicazioni di risultati originali della ricerca scientifica, i dati grezzi e i metadati, le fonti, le rappresentazioni digitali grafiche e di immagini e i materiali multimediali scientifici) deve essere garantito un accesso aperto al pubblico nel minor tempo e con il minor numero di limitazioni possibile, secondo i principi "Open science" e "FAIR Data".



Journals: Nature

An inherent principle of publication is that others should be able to replicate and build upon the authors' published claims. Therefore, a condition of publication in a Nature journal is that authors are required to make materials, data and associated protocols promptly available to readers without undue qualifications.

[...]The preferred way to share large data sets is via public repositories.

http://www.nature.com/authors/policies/availability.html



Journals: PLOS

Data Availability

PLOS journals require authors to make all data underlying the findings described in their manuscript fully available without restriction, with rare exception.

[...]

Refusal to share data and related metadata and methods in accordance with this policy will be grounds for rejection. [...]

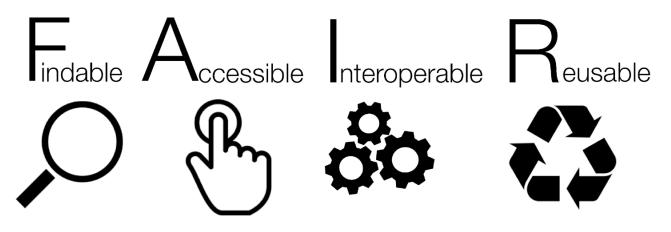
http://www.plosone.org/static/policies.action#sharing







FAIR Data Principles



- FAIR Data Principles
- Wilkinson et al. (2016), The FAIR Guiding Principles for scientific data management and stewardship, Scientific Data 3, <u>doi:10.1038/sdata.2016.18</u>
- SNF: Explanation of the FAIR Data Principles



F - Findable

others can discover your data

- described using rich metadata
- using persistent identifiers
- indexed in catalogues or databases



F - Findable

imagine looking for a book in a library

- you can use the catalogue
 - you need the book to be described (metadata)
 - e.g. Nordic crime series; encyclopedia of modern airplanes
- you will find the location
- you will need some kind of very specific (unified) identification "6th floor, shelf 6A/276, HF5718 .22 .F85 2014"



F - Findable – how to?

in libraries librarians create the description (metadata) for you

in online world, the author has to describe uploaded content himself (!)

repository can help you with identification – assign persistent identifiers (eg. DOI)





Metadata

- metadata describe data
 - e.g. title, author, keywords, subject headings, identifiers...
- metadata help other people find your data!
- author of datasets usualy chooses metadata when uploading to repository do not underestimate this!
 - your data can be lost or found... it depends on you!
- libraries can help
 - librarians love metadata ;-)



Persistent identifiers (PID)

- sequence of letters/numbers in specified format, managed by some service provider
- **unique** different things have different identifiers
 - note: name is not unique identifier (e.g. Carl Johansson)
- persistent should work 'forever'
- resolvable there is a way how to get representation of identified object (e.g. links see below)



Persistent identifiers (PID)

- provided by some service
 - DOI digital object identifier 10.5281/zenodo.5665754
 - articles
 - data
 - ORCID Open Researcher and Contributor ID -- 0000-0002-8271-3674
 - ROR.org Research Organization Registry 024d6js02
- note: URL is NOT identifier <u>https://zenodo.org/record/5665755#.Yh6O1-iZOUk</u>
- ...but most PIDs are resolvable (you can use them in URL):
- <u>https://doi.org/10.5281/zenodo.5665754</u>, <u>https://orcid.org/0000-0002-8271-3674</u>, <u>https://ror.org/024d6js02</u>



A - Accessible

your data can be made available to others

- using some "simple protocol" e.g. web browser
- or using some more sophisticated way (asking for permission etc.)
- knowing persistent identifier should always help you
 - you should always get at least metadata
- not everything has to be shared without limitations
 - "As open as possible, as closed as necessary."



A - Accessible – how to?

• publish/share in a

repository

• publish at least metadata

Cite	

Download (7.59 MB)

Share Embed + Collect

Dataset posted on 29.07.2020, 11:18 by Petr Čermák, Rudolf Schönmann, Christian Franz, Astrid Schneidewind, Christian Pfleiderer, Oleg Sobolev

Abstract:

Recently, time-of-flight neutron spectroscopy in polycrystalline samples of CeCuAl3 has provided putative evidence for a so-called vibronic mode – a combined crystal field - phonon excitation. These types of modes may be responsible for certain forms of magnetically mediated superconductivity or non-Fermi liquid behavior. Our measurement on single-crystal CeAuAl3 performed on the PUMA (p10684, see references) revealed a weakly dispersive excitation at energy 7.9 meV, which is clearly magnetically driven and connected to phonons. However to better understand the nature of this hybridized excitation, more phonon measurements are necessary. Therefore we propose to determine the detailed dispersion of the low lying optical phonons in the energy range between 12-50 meV.

Place:

Heinz Meier-Leibnitz Zentrum, Garching, Germany (MLZ)

Instruments:

PUMA (https://mlz-garching.de/puma)

Date:

Tue, 29. Nov 2016 to Sun, 04. Dec 2016

Disclaimer:

Abstract is not modified version of the abstract from original scientific proposal submitted to MLZ. Data are published exactly as they were send to us after the end of experiments (automatic email by NICOS). Authenticity of the data can be verified by the data scientists at MLZ, feel free to contact them.

USAGE METRICS

45	15	0
iews	downloads	citations

CATEGORIES

- Condensed Matter Physics
- Electronic and Magnetic Properties of Condensed Matter; Superconductivity



Select an option 💌



I - Interoperable

other people should be able to use your data (with their own data)

- it should be possible to understand the data
 - format should be readable
 - there should be helpful documentation
 - well known terminology should be used (domain standards)



I - Interoperable – how to?

- use open formats (plaintext rules!)
- use the right language!

NIH	National Library	of Medicine					
Sear	ch Tree View	MeSH on Demand	MeSH 2021	MeSH Suggestions	About MeSH Browser	Contact Us	

2019-nCoV Vaccine mRNA-1273 MeSH Descriptor

Data 2022





Interoperable

- open format is not enough by itself -
 - people should be able to understand your data
- example: temperature
 - **36,6**
 - **36,1**
 - **37,8**
 - 41,5
- what is the context?
 - patient data or hot summer?
- describe your data to make it interoperable (and reusable)!



R - Reusable

others should be allowed to (confidently) reuse your data

- it should be possible to trust the data
 - provenance
- it should be clear what are is allowed to do with the data
 - licensing conditions



R - Reusable – how to?

- describe the origin of the data sufficiently
 - how did you get them?
 - how were the data modified/processed?
- use license describing what is possible/legal to do with your data
 - \circ share it freely?

Apri	4, 20	21				
DOI:						
DO	10.5	281/zenod	lo.466173	37		
Keyw	ord(s)	:				
CO	/ID-19	Air Traffic	flight tra	icks f	uel consi	umption
Blac	k Carbo	n emission	contrail	CoCiF		
Licen	se (fo	r files):	<u>а</u>		_	





Why Open Data?

Illustration by Ainsley Seago. From Roche, et. al. *Troubleshooting Public Data Archiving: Suggestions to Increase Participation. PLoS Biology* 12(1): e1001779. https://doi.org/10.1371/journal.pbio.1001779. Licensed

under <u>Creative Commons Attribution 4.0 International License</u>.



"Currencies" of science

- Peer-reviewed articles in "high-impact" journals
- Publishing books with well-respected publishers
- Citations of your own work through other authors
- Conference contributions (talks, posters)
- At the end of the day, that's what you get grants, funding, professorships,... for.



The scientific incentive system and the distribution of scientific results

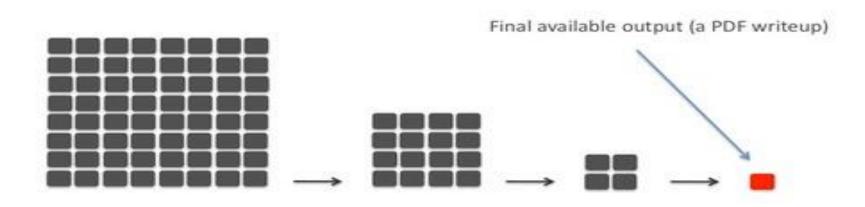
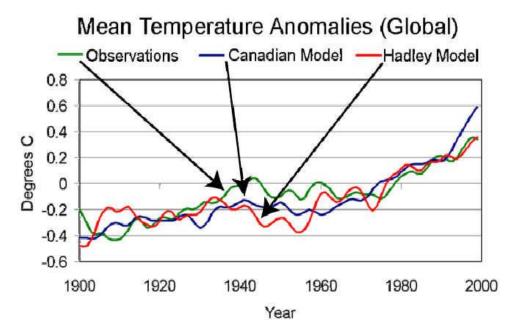


Illustration from http://blog.peerj.com/post/65345738206/changing-the-currency-of-science-to-solve-our-greatest

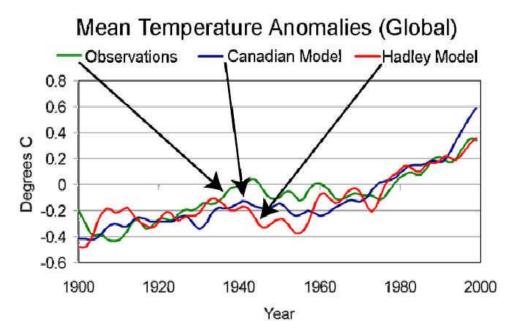


But open data improve science! Example Climate Science





But open data improve science! Example Climate Science



The Telegraph

 Home
 Video
 News
 World
 Sport
 Business
 Money
 Comment
 Culture
 Travel
 Life
 W

 Politics
 Investigations
 Obits
 Education
 Science
 Earth
 Weather
 Health
 Royal
 Celebrit

 News
 Environment
 Climate Change
 Wildlife
 Picture Galleries
 Earth Video
 Tree diseases

HOME » NEWS » EARTH » ENVIRONMENT » CLIMATE CHANGE

Captain Cook's log books help scientists chart climate change

Weather logs kept by Captain James Cook and other 18th and 19th century explorers are being used by scientists to predict the change in climate.



climate change Photo: AP

7:57AM BST 06 Oct 2009

Climate Change News » UK News » Earth News » Environment »

In Climate Change



Bolivia's second largest lake dries up



China's dirty old town



Captain Cook's weather reports from Discovery and Resolution, made at noon each day on his voyages to unknown lands, William Bligh's Bounty



40



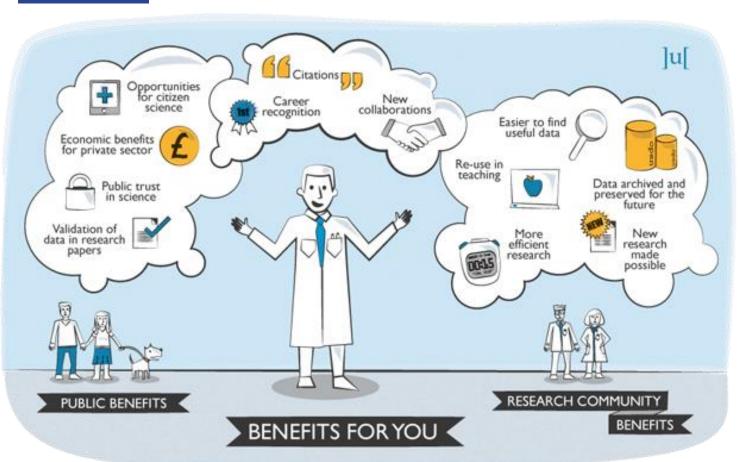
But open data improve science! Example DNA Sequencing Data

	sources 🕙 How To 🗹				Sign in to NCE
Nucleotide	Nucleotide	•		Search	
		Advanced			Hel
Display Setting	s 👻 GenBank		Send +	Change region shown	
Homo sapiens hemoglobin, beta (HBB), mRNA NCBI Reference Sequence: NM_000518.4			Customize view		
EASTA Grap	hics			Analyze this sequence Run BLAST	6
LOCUS	NM_000518	626 bp mRNA linear PRI 09-JUN-2015		Pick Primers	
	Homo sapiens hemoglob:	in, beta (HBB), mRNA.		Highlight Sequence Features	
VERSION	NM_000518 NM_000518.4 GI:283021	128		Find in this Sequence	
KEYWORDS	RefSeq.				
SOURCE	Homo sapiens (human) Homo sapiens				
ORGANISM	Eukaryota; Metazoa; Ch Mammalia; Eutheria; Eu	hordata; Craniata; Vertebrata; Euteleostomi; warchontoglires; Primates; Haplorrhini;		Articles about the HBB gene [IDENTIFICATION OF MUTATION I C) OF THE β-HEMOGLOBIN [Tsite	VS1-5(G >
REFERENCE	Catarrhini; Hominidae; 1 (bases 1 to 626)	/ Homo.		The BioPlex Network: A Systemat	ic Exploration
AUTHORS		ina,N.M., Ianushevich,Iu.G.,		of the Human Interactome.	[Cell. 201
TITLE		nasian,B.E., Luk'ianov,K.A. and Gurskaia,N.G. ta-globin in 3'-untranslated region enhances		XmnI POLYMORPHISM AND DISE SEVERITY I [J Ayub Med Coll Abb	
JOURNAL PUBMED	Bioorg. Khim. 40 (3), 25898735				See all
REMARK		hat introduction of beta-globin intron in the			
		c gene can be used to enhance its expression us in some cases when usage of 5'-UTR intron		Pathways for the HBB gene Erythrocytes take up oxygen and i	
	is inappropriate			dioxide	release carbor
REFERENCE	2 (bases 1 to 626)	eviakoe IM. Kpatarou L. Mawussi K. Magnang H		Ervthrocytes take up carbon dioxid	to and release

Human Genome Project: Sequencing and mapping of the human genome, completed 2003

"The success of the genome project is in no small part due to the fact that the world's entire library of published DNA sequences has been an open access public source for the past 20 years. If sequences could be obtained only in the way that traditionally published work can be obtained - there would be no genome project" (Prof. Patrick Brown, Biochemist at Stanford University, 2004)





Picture: Hole, B. (2015). Open Science: <u>A New publisher</u> <u>Perspective</u>. Ubiquity press. (<u>CC BY 4.0 International</u>)



What kind of repositories are around for my field of research?





Filter	machine learning	Q Search
Subjects 🗄		Toogle short he
Content Types ⊞		
Countries	← Previous 1 Next →	Sort by -
AID systems		
API 🕀	Found 4 result(s)	
Data access	round 4 result(s)	
Data access restrictions	UCI Machine Learning Repository	a 🖸 🖉 🖉 🖉 🖉
Database access ⊕	UC Irvine Machine Learning Repository	
Data licenses ⊕	Subject(s)	Communication Science Artificial Intelligence, Image and Language Processing Computer Science Social Sciences
Data upload ⊞	oubject(b)	Social and Behavioural Sciences Humanities and Social Sciences Computer Science, Electrical and System Engineering Engineering Sciences
Data upload restrictions		
Enhanced publication	Content type(s)	Standard office documents Archived data Plain text Databases
Institution responsibility type	Country	United States
Institution type		
Keywords 🕀		ection of databases, domain theories, and data generators that are used by the machine learning community for the empirical analysis of ents, educators, and researchers all over the world as a primary source of machine learning data sets. As an indication of the impact of
Metadata standards ⊞	the archive, it has been cited over 1000 times.	
PID systems		
Provider types ⊞		11 8 © 🗉 🔍
Quality management	OpenML	
Repository languages	Open Machine Learning	
Software 🗄	Subject(s)	Education Sciences Computer Science Social and Behavioural Sciences Humanities and Social Sciences
Repository types		Computer Science, Electrical and System Engineering Engineering Sciences
Versioning	Content type(s)	Standard office documents Structured graphics Plain text Software applications Source code Configuration data other Databases
	Country	Belgium European Union Netherlands
	detailed experimental results with the commun KNIME, RapidMiner and WEKA). Such an easy	arning. By organizing all resources and results online, research becomes more efficient, useful and fun. OpenML is a platform to share ity at large and organize them for future reuse. Moreover, it will be directly integrated in today's most popular data mining tools (for now: R, and free exchange of experiments has tremendous potential to speed up machine learning research, to engender larger, more detailed oners. Finally, it will also be a valuable resource for education in machine learning and data mining.

6

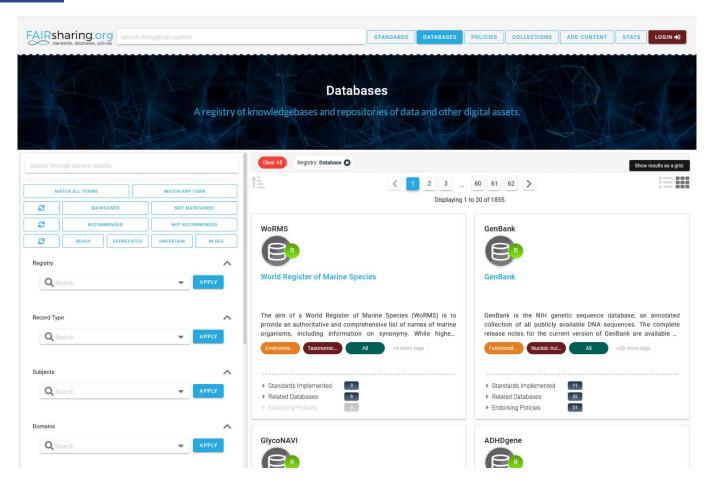
Repository details

OpenML



General Ir	stitutions Terms Standards
Name of reposit	ory OpenML
Additional name	(s) Open Machine Learning
Repository URL	http://www.openml.org/
Subject(s)	Education Sciences Computer Science Social and Behavioural Sciences Humanities and Social Sciences
	Computer Science, Electrical and System Engineering Engineering Sciences
Description	OpenML is an open ecosystem for machine learning. By organizing all resources and results online, research becomes more efficient, useful and fun. OpenML is a platform to share detailed experimental results with the community at large and organize them for future reuse. Moreover, it will be directly integrated in today's most popular data mining tools (for now: R, KNIME, RapidMiner and WEKA). Such an easy and free exchange of experiments has tremendous potential to speed up machine learning research, to engender larger, more detailed studies and to offer accurate advice to practitioners. Finally, it will also be a valuable resource for education in machine learning and data mining.
Contact	openmachinelearning@gmail.com
Content type(s)	Standard office documents Structured graphics Plain text Software applications Source code
	Configuration data other Databases
Keyword(s)	machine learning meta-learning experimental methodology datasets algorithms experiments
Repository size	1700000 machine learning experiments on 19630 datasets and 3370 implementations
Repository type	s) disciplinary
Mission stateme designated com	









A rough typology of data repositories:

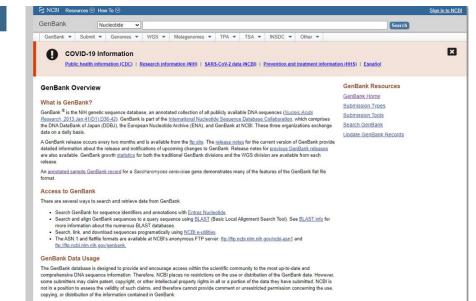
- Controlled access repositories
- Subject- or domainspecific repositories
- Institutional repositories
- Generic repositories



Domain repositories

(Linguistic Data and Citation	I NLP Tools Support (with Persistent IDs)	LIN		ARIN
	Q		Search		
		Advanced Search			
	Author	Subject	Language	(ISO)	
	Veselý, Bohumil (787)	Galerie osobnosti (787)		uistic content (709)	
	Hajič, Jan (86)	People (784)		(439)	
	Straka, Milan (65)	Places (528)	English	1 (302)	
	Krátký film (63)	machine translation (60)	Germai	n (210)	
	Žabokrtský, Zdeněk (60)	Germanistik (50)	French	(110)	
	View More	View More	View	More	
				Browse	
What's New			_	> All of the Repository	
ToolService		LING	DAT / CLARIAH-CZ		
			N (1)	Account My Account	
Image Annotation	Tool		the 3	Dogin	
Author(s): Roček, Martin				General Information	
				-	
Description:	1 Deposit				





.

https://www.ncbi.nlm.nih.gov/genbank/



LINDAT	Search Catalogue	Education	Projects	Tools Se	rvices At	oout 🕶		Cariah-eu		
	Depos License of your Choice (r Easy to Find Easy to Cite	sit Free an Open licenses en	d Safe			LIN	CLARI	АН-СZ	CLARIN	4
	Q				s	Search				
			Advance	ed Search						
	Author		Subject			Language (I	SO)			
	Veselý, Bohumil (787)					guistic content (709)				
	Hajič, Jan (86)		People (784)		Czech (439)					
	Straka, Milan (65	i)	machine translation (60) Germa		English (
	Krátký film (63)				German					
	Žabokrtský, Zde	něk (60)			French (1	10)				
	View More		Viev	w More		View N	lore			
							0	Browse		
What's New								> All of the Rep	ository	
ToolService					LINDAT /	CLARIAH-CZ		My Account		
Image Annotation	Tool				P	2.0.				
Author(s):						Nos 2		Login		
Roček, Martin						_	0	General Inform	nation	
Description:								1 Deposit		
	I is a web application that allow code snippet that can be used					a then		99 Cite		
This item contains 1 fil		,	in serine er ure	ge and die to						
S This tem contains 1 h								C Submission		

LINDAT/CLARIAH-CZ

- linguistics / digital humanities repository
- repository + services



LINDAT	Search Catalogue Education Projects Tools Services About $ullet$	BARIAH-EU CLARIN
LINDAT/CLARIAH-CZ Repo	ository Home / View Item	Search Q
Universal Depe	Indencies 2.9	
Zeman, Daniel; et al., 20	221, Universal Dependencies 2.9, LINDAT/CLARIAH-CZ digital library at the Institute of Formal and AL), Faculty of Mathematics and Physics, Charles University, <u>http://hdl.handle.net/11234/1.4611</u> .	Browse All of the Repository
🔩 Share: 🛐 💟		My Account
	LINDAT / CLARIAH-CZ	Degin
Authors	Zeman, Daniel ; et al. ▶ show everyone	III Statistics
→ Item identifier	http://hdl.handle.net/11234/1-4611	Statistics
% Project URL	http://universaldependencies.org/	General Information
% Referenced by	https://doi.org/10.1162/coli a 00402	1 Deposit
		55 Cite
mate issued	2021-11-15	C Submission Lifecycle
🗣 Туре	corpus, text	? FAQ
🔀 Size	29074543 tokens, 29592250 words, 1697879 sentences	About
⊯ Language(s)	Afrikaans , Akkadian , Akuntsu , Albanian , Amharic , AncientGreek (to 1453) , Apurinā , Arabic , Armenian , AssyrianNeo-Aramaic , Bambara , Basque , Beja , Belarusian , Bengali , Bhojpur , Breton , Bulgaran , Catalan , Central Siberian Yupik , Chinese , Chukot , ChurchSlavic , Coptic , Croatian , Czech , Danish , Dutch , English , Erzya , Estonian , Farocse, Finnish , French , Galician , German , Gothic , Guajajára , Hebrew , Hindi , Hungarian , Icelandic , Indonesian , Irish , Italian , Japanese , Javanese , Kicher , Kangri , Karelian , Karo(Brazil) , Kazakh , Khunsari , Komi-Permyak , Komi-Zyrian , Korean , Latin , Lativian , Ligurian , LiteraryChinese , Lithuanian , Livw , LowGerman , Makuráp , Maltese , Manx , Marathi , MbyáGuaraní , Moderm Greek (1453) , Moksha , Mundurukki , Nayini , Neapoltan , Nigerian Pidgin , NorthernKurdish , Northern Sami , Norwegian , OldFrench (842-ca. 1400) , OldRussian , Old Turkish , SkollSami , Slovak , Slovenian , Soi , South Levanline Arabic , Spanish , Swedish , Swedish , Suedish Sign Language , SwissGerman , Tagalog , Tamil , Tatar , Telugu , Thai , Tupinambá , Turkish , Uighur , Utrajian , UboerSorbian , Urdu , Urubú-Kaapor , Vietnamese , Warlori , Welsh , Western Armenian .	Help Desk

- reference to the article
- languages are important
- PID is handle (not DOI)



	, SwissGerman , Tagalog , Tamil , Tatar , Telugu , Thai , Tupinambá , Turkish , Uighur , Ukrainian , UpperSorbian , Urdu , Urubú-Kaapor , Vietnamese , Warlpiri , Welsh , Western Armenian , WesternFrisian , Wolof , Xibe , Yakut , Yoruba , YueChinese
Description	Universal Dependencies is a project that seeks to develop cross-linguistically consistent treebank annotation for many languages, with the goal of facilitating multilingual parser development, cross-lingual learning, and parsing research from a language typology perspective. The annotation scheme is based on (universal) Stanford dependencies (de Marneffe et al., 2006, 2008, 2014), Google universal part-of-speech tags (Petrov et al., 2012), and the Interset interlingua for morphosyntactic tagsets (Zeman, 2008).
	Version 2.8.1 fixes a bug in 2.8 where a portion of the Dutch Alpino treebank was accidentally omitted.
🖓 Publisher	Universal Dependencies Consortium
Acknowledgement	Ministerstvo školství, mládeže a tělovýchovy České republiky
	Project code: LM2018101
	Project name: LINDAT/CLARIAH-CZ: Digitální výzkumná infrastruktura pro jazykové technologie, umění a humanitní vědy
Subject(s)	treebank dependency syntax morphology harmonized annotation interset universal tagset stanford dependencies
A Collection(s)	LINDAT / CLARIAH-CZ Data & Tools
P Other versions	List all versions -
Show full item record	
Files in this item	
Download instructions for	command line Download all files in item (534.14 MB)
	This item is Publicly Available, and licensed under: Licence Universal Dependencies v2.9
Name Size Format	441.62 MB

- description
- subjects (keywords)
- different versions of the dataset
- license



Download instructions for e	command line Download all files in item (534.14 MB)	
	This item is Publicly Available and licensed under: Licence Universal Dependencies v2.9	
Size Format Description	ud-treebanks-v2.9.tgz 441.62 MB application/x-gzip Treebank data 245004a1868093977cef42c92c870153	
O Download file O Preview	File Preview	
Size Format	L conllu L bt st. bt ud-documentation-v2.9.tgz 91.97 MB application/x-gzip	1 kB 1 kB 202 B 431 B 56 B 3 kB 386 B 1 kB 000 2
MD5 Download file Preview		3
Size Format Description	3591a4120be718b03c5f44a73a2bdc28	

- file preview
- this dataset = data + documentation + tools



LINDAT Search Catalogue Education Projects Tools Services About -	CARIAH-EU CLARIN
INDAT/CLARIAH-CZ Repository Home / Item submission	Search Q
tem submission A handle http://hdl.handle.net/20.500.12800/1-4674 is reserved for your submission, you can use this handle for citation purposes. Please note that the handle will only become active after successful completion and approval of your submission.	
Notice Basic Info Who's involved Describe Upload License Note Review Complete	⊗ Browse > All of the Repository ▲ My Account ← Logout
Read and accept the Distribution License Agreement Accepted By checking this box, you agree to the Distribution License Agreement for this repository to reproduce, translate and distribute your submissions worldwide.	Profile Submissions General Information Deposit
A If you have questions regarding this licence please contact the Help Desk.	55 Cite
	C Submission Lifecycle
	? FAQ
Select the resource license	() About
Select the resource license	Help Desk
The License Selector will provide you visual assistance to select the most appropriate license for your data or software. For the list of all supported licenses and their details visit License List Page.	
OPEN License Selector	
- OR -	
If you already know under which license you want to distribute your work, please select from the dropdown below.	
Select a License v	

- login with your institutional credentials
- steps of new submission
- license is important \rightarrow ...



Choose a License Answer the questions or use the search to find the license you want Start again + • • What do you want to deposit?	 select l data it is po license
Software Data	CLARIN
Creative Commons Attribution-NonCommercial-Share A creative commons license that bans commercial use and requires license. Publicly Available () () () () ()	
Creative Commons Attribution-ShareAlike (CC-BY-S/ This creative commons license is very similar to the regular Attribution derivative works under this same license. Publicly Available () () () () () () () () () () () () ()	
Mozilla Public License 2.0	
This is a lenient license used by the Mozilla Corporation that all software so long as you keep modifications under this license a executables. It is a good midway license; it isn't very strict and t	None of these licenses suits your needs
Publicly Available Image: Constraint of the second se	 If you need to use a license we currently do not offer, proceed as follows: Obtain a link (or a copy) to the license. Send an email to Help Desk with the license details. Save the unfinished submission and wait. We will add the license to the license to the license to the license to the unfinished submission and wait. We will add the license to the license to the license to the license to the license.

- select license for software or • data
- it is possible to use custom • licenses

se details.

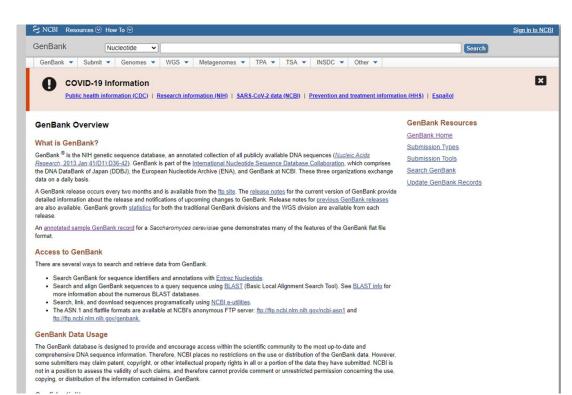
- We will add the license to the selection list and contact you.
- · You will be able to continue the submission afterwards.



NDAT Search Catalogue Education Projects Tools Services About -	🖓 RIAH-EU CLARIN 🧩 English 🛪	LINDAT Search Catalogue Education Projects Tools Services About • 🖓 المعلماتين وسمينية 🦕
ital Research Infrastructure for the Language Technologies, Arts and Humanities	supported by 🏻 🏷	LINDAT Translation
Aachine translation	Terms of Use ► Most popular ▼	Translate Docs The translation service is available for personal and non-commercial use (see terms of use for more details). Source Target English V
Kobarko, Ondřej: Variš, Dušan and Popek, Martin, 2019, LINDAT Franslation service, LINDAT/CLARIAH-CZ digital library at the Institute of Formal and Applied Linguistics (UFAL), Faculty of Mathematics and Physics, Charles University, http://hdl.handle.net/11234/1-2922.	Machine translation UDPipe KonText	advanced Input sentences Translation Let's talk about some specific repositories. Pojdme se bavit o některých konkrétních úložištich.
Authors: Martin Popel, Dušan Variš, Ondřej Košarko Description: A neural networks based translation service provides a simple UI and API that lets you use Transformer models trained by our experts. Five models are currently provided with more to come.	UWebASR	Translate Choose file
2 Project home J Run	Search services	Credits: The service runs systems trained by: Martin Popel CUEBITT models, en<-cs, en<-yt, en<-yt as desitted in PopelM. To creative M. Terratforming machine translation: a deep learning system maches news translation quality comparable to
DPipe Please use the following text to cite this item or export to a predefined format: BUTEX CMON	Automatic speech recognition ►	human professionals. Nat Commun 11, 434 (2020), https://doi.org/10.1038/s1447-200-18073-9 As of Jan 19 2022; the en <cs (and="" advanced="" api)="" cubbitt="" document-level="" mode="" models.="" offers="" old<br="" still="" the="" translation="" upgraded="" uses="">sentence-level models. Shantionys Panda en-Ni model</cs>
Strake, Milan and Straković, Jana, 2016, UDPipe, LINDATICLARIAH-CZ digital library at the Institute of Formal and Applied Linguistics (UFAL), Faculty of Mathematics and Physics, Charles University, http://hdl.handie.net/1234/1-1702.		Dušku Varis en ⊷ru, en ⇔de models
🔩 Share: 😭 💟		
Authors: Milan Straka, Jana Straková		• repositories can be connected to

infrastructures and provide services





GenBank

"GenBank is the NIH genetic sequence database, an annotated collection of all publicly available DNA sequences"



S NCBI	Resources 🛛 How To 🖸	Sign in to NCBI
Nucleotid	le Nucleotide v	Search
	COVID-19 Information Public health information (CDC) Research information (NIH) SARS-CoV-2 data (NCB)) Prevention and treatment information (X HHS) Español
GenBank 🗸	Send to	Change region shown
	romyces cerevisiae TCP1-beta gene, partial cds; and Axl2p (AXL2) and (REV7) genes, complete cds	Customize view
GenBank: U FASTA Gr	J49845.1 aphics	Analyze this sequence
<u>Go to:</u> ♥		Pick Primers
LOCUS	SCU49845 5028 bp DNA linear PLN 29-OCT-2018	Highlight Sequence Features
DEFINITION	Saccharomyces cerevisiae TCP1-beta gene, partial cds; and Ax12p	Find in this Sequence
ACCESSION	(AXL2) and Rev7p (REV7) genes, complete cds. U49845	Find in this Sequence
VERSION	U49845.1	
KEYWORDS		Related information
SOURCE ORGANISM	Saccharomyces cerevisiae (baker's yeast) <u>Saccharomyces cerevisiae</u>	Protein
Children 1201	Eukaryota; Fungi; Dikarya; Ascomycota; Saccharomycotina;	PubMed
	Saccharomycetes; Saccharomycetales; Saccharomycetaceae;	Pubmed
REFERENCE	Saccharomyces. 1 (bases 1 to 5028)	Taxonomy
AUTHORS	Roemer,T., Madden,K., Chang,J. and Snyder,M.	Full text in PMC
TITLE	Selection of axial growth sites in yeast requires Ax12p, a novel	PubMed (Weighted)
JOURNAL	plasma membrane glycoprotein Genes Dev. 10 (7), 777-793 (1996)	
PUBMED	<u>8846915</u>	
REFERENCE	2 (bases 1 to 5028)	LinkOut to external resources
AUTHORS TITLE	Roemer,T. Direct Submission	Dryad Digital Repository
JOURNAL	Submitted (22-FEB-1996) Biology, Yale University, New Haven, CT	[Dryad Digital Repository]
	06520, USA	Dryad Digital Repository
FEATURES	Location/Qualifiers e 15028	[Dryad Digital Repository]
sourc	/organism="Saccharomyces cerevisiae"	
	/mol_type="genomic DNA"	Recent activity
	/db_xref="taxon: <u>4932</u> " //brane.com: <u>4932</u> "	
mRNA	/chromosome="IX" <1>206	Turn Off Clear
	/product="TCP1-beta"	Saccharomyces cerevisiae TCP1-beta gene, partial cds; and Axl2p (AXL2) and R(Nucleotide
CDS	<1206	
	/codon_start=3 /product="TCP1-beta"	Be FAIR to your data

- GenBank identifier (U49845)
- reference to article is important
- specific metadata fields
- ORGANISM from taxonomy

 $\rightarrow \dots$





o Saccharomyces cerevisiae (baker's yeast) Click on organism name to get more information.

- Saccharomyces cerevisiae 'var. diastaticus'
- Saccharomyces cerevisiae 101S
- Saccharomyces cerevisiae 228 CU-2
- Saccharomyces cerevisiae A364A
- Saccharomyces cerevisiae AWRI1631
- Saccharomyces cerevisiae AWRI796
- Saccharomyces cerevisiae BMN1-35
- Saccharomyces cerevisiae BY2961
- Saccharomyces cerevisiae BY4741
- Saccharomyces cerevisiae BY4741-AV16
- Saccharomyces cerevisiae BY4741-AV8
- Saccharomyces cerevisiae BY4741-BV19
- Saccharomyces cerevisiae BY4741-E18
- Saccharomyces cerevisiae BY4743
- Saccharomyces cerevisiae CAT-1
- Saccharomyces cerevisiae CBS 1585
- Saccharomyces cerevisiae CBS 2910
- Saccharomyces cerevisiae CBS 7833
- Saccharomyces cerevisiae CBS 7834
- Saccharomyces cerevisiae CBS 7835
- Saccharomyces cerevisiae CBS 7836
- Saccharomyces cerevisiae CBS 7837
- Saccharomyces cerevisiae CBS 7838
- Saccharomyces cerevisiae CBS 7839
- Saccharomyces cerevisiae CBS 7840
- Saccharomyces cerevisiae CBS 7960
- Saccharomyces cerevisiae CBS 9562
- Saccharomyces cerevisiae CBS 9563
- Saccharomyces cerevisiae CBS 9564
- Saccharomyces cerevisiae CBS 9565
- Saccharomyces cerevisiae CEN.PK113-7D
- Saccharomyces cerevisiae CLIB215
- Saccharomyces cerevisiae CLIB324
- Saccharomyces cerevisiae CLIB382
- Saccharomyces cerevisiae EC1118
- Saccharomyces cerevisiae EC9-8
- Saccharomyces cerevisiae FL100 EN
 - Saccharomyces cerevisiae Fleischmanns baking veast
 - Saccharomyces cerevisiae FostersB
 - Saccharomyces cerevisiae FostersO

ORGANISM from taxonomy

 \rightarrow

Saccharomyces

cerevisiae



//codm_statt=1 /product="Rev7p" /protein_id="AAA98667.1" /translation="WRMNVEKUR.RVVLKCYINLILFVRNVYPPQSFDYTTYQSFNLPQ FVPINHPALIDYIEELILDVLSKITHVYRFSICIINKKNDLCTEKYVLDFSELQMD KODQIITETEVFDEFRSSLNSLIHHLEKLFKVNDDTITFEAVINATELELGHKLDRNR RVD5LEEKAEIERDSMNVKCQEDENLDPNNFQPPKIKLTSLVGSDVGPLIHQFSEK LISGODKILMVSQVEGEG51F05LF"

ORIGIN

1 gatcctccat atacaacggt atctccacct caggtttaga tctcaacaac ggaaccattg 61 ccgacatgag acagttaggt atcgtcgaga gttacaagct aaaacgagca gtagtcagct 121 ctgcatctga agccgctgaa gttctactaa gggtggataa catcatccgt gcaagaccaa 181 gaaccgccaa tagacaacat atgtaacata tttaggatat acctcgaaaa taataaaccg 241 ccacactgtc attattataa ttagaaacag aacgcaaaaa ttatccacta tataattcaa 301 agacgcgaaa aaaaaagaac aacgcgtcat agaacttttg gcaattcgcg tcacaaataa 361 attttggcaa cttatgtttc ctcttcgagc agtactcgag ccctgtctca agaatgtaat 421 aatacccatc gtaggtatgg ttaaagatag catctccaca acctcaaagc tccttgccga 481 gagtcgccct cctttgtcga gtaattttca cttttcatat gagaacttat tttcttattc 541 tttactctca catcctgtag tgattgacac tgcaacagcc accatcacta gaagaacaga 601 acaattactt aatagaaaaa ttatatcttc ctcgaaacga tttcctgctt ccaacatcta 661 cgtatatcaa gaagcattca cttaccatga cacagcttca gatttcatta ttgctgacag 721 ctactatatc actactccat ctagtagtgg ccacgcccta tgaggcatat cctatcggaa 781 aacaataccc cccagtggca agagtcaatg aatcgtttac atttcaaatt tccaatgata 841 cctataaatc gtctgtagac aagacagctc aaataacata caattgcttc gacttaccga 901 gctggctttc gtttgactct agttctagaa cgttctcagg tgaaccttct tctgacttac 961 tatctgatgc gaacaccacg ttgtatttca atgtaatact cgagggtacg gactctgccg 1021 acagcacgtc tttgaacaat acataccaat ttgttgttac aaaccgtcca tccatctcgc 1081 tatcgtcaga tttcaatcta ttggcgttgt taaaaaacta tggttatact aacggcaaaa 1141 acgctctgaa actagatcct aatgaagtct tcaacgtgac ttttgaccgt tcaatgttca 1201 ctaacgaaga atccattgtg tcgtattacg gacgttctca gttgtataat gcgccgttac 1261 ccaattggct gttcttcgat tctggcgagt tgaagtttac tgggacggca ccggtgataa 1321 actcggcgat tgctccagaa acaagctaca gttttgtcat catcgctaca gacattgaag 1381 gattttctgc cgttgaggta gaattcgaat tagtcatcgg ggctcaccag ttaactacct 1441 ctattcaaaa tagtttgata atcaacgtta ctgacacagg taacgtttca tatgacttac 1501 ctctaaacta tgtttatctc gatgacgatc ctatttcttc tgataaattg ggttctataa 1561 acttattgga tgctccagac tgggtggcat tagataatgc taccatttcc gggtctgtcc 1621 cagatgaatt actcggtaag aactccaatc ctgccaattt ttctgtgtcc atttatgata 1681 cttatggtga tgtgatttat ttcaacttcg aagttgtctc cacaacggat ttgtttgcca 1741 ttagttctct tcccaatatt aacgctacaa ggggtgaatg gttctcctac tatttttgc 1801 cttctcagtt tacagactac gtgaatacaa acgtttcatt agagtttact aattcaagcc 1861 aagaccatga ctgggtgaaa ttccaatcat ctaatttaac attagctgga gaagtgccca 1921 agaatttcga caagctttca ttaggtttga aagcgaacca aggttcacaa tctcaagagc 1981 tatattttaa catcattggc atggattcaa agataactca ctcaaaccac agtgcgaatg 2041 caacgtccac aagaagttct caccactcca cctcaacaag ttcttacaca tcttctactt 2101 acactgcaaa aatttcttct acctccgctg ctgctacttc ttctgctcca gcagcgctgc 2161 cagcagccaa taaaacttca tctcacaata aaaaagcagt agcaattgcg tgcggtgttg 2221 ctatcccatt aggcgttatc ctagtagctc tcatttgctt cctaatattc tggagacgca 2281 gaagggaaaa tccagacgat gaaaacttac cgcatgctat tagtggacct gatttgaata 2341 atcctgcaaa taaaccaaat caagaaaacg ctacaccttt gaacaacccc tttgatgatg 2401 atgcttcctc gtacgatgat acttcaatag caagaagatt ggctgctttg aacactttga 2461 aattggataa ccactctgcc actgaatctg atatttccag cgtggatgaa aagagagatt 2521 ctctatcagg tatgaataca tacaatgatc agttccaatc ccaaagtaaa gaagaattat 2581 tagcaaaacc cccagtacag cctccagaga gcccgttctt tgacccacag aataggtctt 2641 cttctgtgta tatggatagt gaaccagcag taaataaatc ctggcgatat actggcaacc 2701 tgtcaccagt ctctgatatt gtcagagaca gttacggatc acaaaaaact gttgatacag 2761 aaaaactttt cgatttagaa gcaccagaga aggaaaaacg tacgtcaagg gatgtcacta

 data have specified, well known format



EN

DD1 allinggida citalgille cicligage aglacitgag cicligities agaalgidat 421 aatacccatc gtaggtatgg ttaaagatag catctccaca acctcaaagc tccttgccga 481 gagtcgccct cctttgtcga gtaattttca cttttcatat gagaacttat tttcttattc 541 tttactctca catcctgtag tgattgacac tgcaacagcc accatcacta gaagaacaga 601 acaattactt aatagaaaaa ttatatcttc ctcgaaacga tttcctgctt ccaacatcta 661 cgtatatcaa gaagcattca cttaccatga cacagcttca gatttcatta ttgctgacag 721 ctactatatc actactccat ctagtagtgg ccacgcccta tgaggcatat cctatcggaa 781 aacaataccc cccagtggca agagtcaatg aatcgtttac atttcaaatt tccaatgata 841 cctataaatc gtctgtagac aagacagctc aaataacata caattgcttc gacttaccg 901 gctggctttc gtttgactct agttctagaa cgttctcagg tgaaccttct tctgacttac 961 tatctgatgc gaacaccacg ttgtatttca atgtaatact cgagggtacg gactctgcc 1021 acagcacgtc tttgaacaat acataccaat ttgttgttac aaaccgtcca tccatctcg 1081 tatcgtcaga tttcaatcta ttggcgttgt taaaaaacta tggttatact aacggcaaaa 1141 acgctctgaa actagatcct aatgaagtct tcaacgtgac ttttgaccgt tcaatgttca 1201 ctaacgaaga atccattgtg tcgtattacg gacgttctca gttgtataat gcgccgttac 1261 ccaattggct gttcttcgat tctggcgagt tgaagtttac tgggacggca ccggtgataa 1321 actcggcgat tgctccagaa acaagctaca gttttgtcat catcgctaca gacattgaa 1381 gattttctgc cgttgaggta gaattcgaat tagtcatcgg ggctcaccag ttaactacct 1441 ctattcaaaa tagtttgata atcaacgtta ctgacacagg taacgtttca tatgacttac 1501 ctctaaacta tgtttatctc gatgacgatc ctatttcttc tgataaattg ggttctata 1561 acttattgga tgctccagac tgggtggcat tagataatgc taccatttcc gggtctgtcc 1621 cagatgaatt actcggtaag aactccaatc ctgccaattt ttctgtgtcc atttatgata 1681 cttatggtga tgtgatttat ttcaacttcg aagttgtctc cacaacggat ttgtttgcca 1741 ttagttctct tcccaatatt aacgctacaa ggggtgaatg gttctcctac tatttttg 1801 cttctcagtt tacagactac gtgaatacaa acgtttcatt agagtttact aattcaagco 1861 aagaccatga ctgggtgaaa ttccaatcat ctaatttaac attagctgga gaagtgccc 1921 agaatttcga caagctttca ttaggtttga aagcgaacca aggttcacaa tctcaagag 1981 tatattttaa catcattggc atggattcaa agataactca ctcaaaccac agtgcgaatg 2041 caacgtccac aagaagttct caccactcca cctcaacaag ttcttacaca tcttctacti 2101 acactgcaaa aatttettet aceteegetg etgetaette ttetgeteea geagegetge 2161 cagcagccaa taaaacttca tctcacaata aaaaagcagt agcaattgcg tgcggtgttg 2221 ctatcccatt aggcgttatc ctagtagctc tcatttgctt cctaatattc tggagacgca 2281 gaagggaaaa tccagacgat gaaaacttac cgcatgctat tagtggacct gatttgaata atcctgcaaa taaaccaaat caagaaaacg ctacaccttt gaacaacccc tttgatgat 2341 2401 atgcttcctc gtacgatgat acttcaatag caagaagatt ggctgctttg aacactttg 2461 aattggataa ccactctgcc actgaatctg atatttccag cgtggatgaa aagagagati 2521 ctctatcagg tatgaataca tacaatgatc agttccaatc ccaaagtaaa gaagaatta 2581 tagcaaaacc cccagtacag cctccagaga gcccgttctt tgacccacag aataggtctt 2641 cttctgtgta tatggatagt gaaccagcag taaataaatc ctggcgatat actggcaac 2701 tgtcaccagt ctctgatatt gtcagagaca gttacggatc acaaaaaact gttgatacag 2761 aaaaactttt cgatttagaa gcaccagaga aggaaaaacg tacgtcaagg gatgtcacta 2821 tgtcttcact ggacccttgg aacagcaata ttagcccttc tcccgtaaga aaatcagtaa 2881 caccatcacc atataacgta acgaagcatc gtaaccgcca cttacaaaat attcaagact 2941 ctcaaagcgg taaaaacgga atcactccca caacaatgtc aacttcatct tctgacgatt 3001 ttgttccggt taaagatggt gaaaattttt gctgggtcca tagcatggaa ccagacagaa 3061 gaccaagtaa gaaaaggtta gtagattttt caaataagag taatgtcaat gttggtcaag 3121 ttaaggacat tcacggacgc atcccagaaa tgctgtgatt atacgcaacg atattttgct 3241 agtttttata cttagagaca tttaatttta attccattct tcaaatttca tttttgcact 301 taaaacaaag atccaaaaat gctctcgccc tcttcatatt gagaatacac tccattcaaa 361 attttgtcgt caccgctgat taatttttca ctaaactgat gaataatcaa aggccccacg gene V Feature A 1 of 2 > > U49845 : 1 segment

Details 🕑

Display: FASTA GenBank Help

data have specified, well known format

 \rightarrow

repository can visualize specific segments of data



Institutional repositories

he	iDATA	Heidelberg Open Research Data				LA STATALE UNIMI Dataverse			G	iuida breve	Add Data 👻	Search 🕶	About	User Guide	Support	Sign Up	Log In
heiDATA	(Heidelberg University) Com	petence Centre for Research Data				.IL Metrics	1,36	0 Downloads								Contact	3 Share
	an institutional repository for Oper	ads n Research Data from Heidelberg University. If you are interested in publishing your data i	Unimi Dataverse is a re Search this dataverse	· · ·		Advanced Search											
<	3D MATTER 3D Matter Made to Order (3DMM2O)	arthistoricum.net @helDATA arthistoricum.net@helDATA	GEOGRAPHISCHES INSTITUT HEIDELBERG 3D Spatial Data Processing	Seographisches ALFRED-WEBER- INSTITUT HEDELBERG INSTITUTE			Confe	of 163 Results rence Meet Me Tonight Feb 25, 2022 - ITAC/ Sacco, Daniela, 202 Presentation of the p	A 22, "Conference		1.1		-		/II Dataverse,	Sort -	
Search this dataverse Q Advanced Search							Laboratory (10) Journal (6) Researcher (5) More More				-	1, UNIMI Data	erse, V2				
Dataverse Research C	attasets (328) Stochastic dynamics of a few sodium atoms in presence of a cold potassium cloud [data] les (3,250) Mar 1, 2022 - Synthetic Quantum Systems (SynQS) se Category Bhatt, Rohit Prasad; Kilinc, Jan; Hocker, Lilo; Jendrzejewski, Fred, 2021, "Stochastic dynamics of a few sodium atoms in presence of a cold potassium cloud [data], https://doi.org/10.11588/data/HRCX/P, heiDATA, V2, UIII: 6 Lico/Hold/WCC FetUnd/Later (FetIal INF)			Sort -	Publication Year 2021 (84) 2020 (31) 2022 (26) 2019 (20) 2018 (2)			ew with Dave Jenniss Feb 25, 2022 - Intervi Sacco, Daniela, 202 Interview with Dave J	iews 22, "Interview wi anniss, director	ith Dave Jenniss", r of Ondinnok thea	, https://doi.org/			R, UNIMI Datav	erse, V2		
Organizatio Research F Department		We provide the data and our upyer notebook used to generate the figures of our publication. Abstract: Single particle resolution is a requirement for numerous experimental protocols that emulate the dynamics of small systems in a bath. Here, we accurately resolve through				Author Name		Intervi	ew with Isabelle Payan Feb 25, 2022 - Inteni		Kaseka						

https://heidata.uni-heidelberg.de

https://dataverse.unimi.it/



		UNIVERSITÄT HEID	UNIVERSITÄT HEIDELBERG ZUKUNFT SEIT 1386					
hei <mark>DATA</mark>				Q Support	t Sign Up	Log In	- DOI'	
Experiment	al Biophysics D	ataverse (Heidelberg University - Kirchhoff-Instit	ute for Physics)					
eiDATA Dataver	se > Experimental	Siophysics Dataverse > SPDM data capturing ra	diation induced chromatin conformation chan	ges				
II Metrics	70 Downloads					C		
PDM data	capturing ra	diation induced chromatin conf	formation changes					
		Hillebrandt, Sabina; Bach, Margund; Kaufmann, R uced chromatin conformation changes , doi:10.115			i Cite Da	itaset 🕶		
Dataverse, V3	turing radiation ind	aced chromatin comormation changes, doi, to, the	Learn about Data Citation Standards.					
Description		protein (YFP) labelled histone H2A, we resolution localization microscopy (Spec radiation of different doses and aliquots	ressing either green fluorescent protein (GFP) labe investigated the positioning of individual histone pr tral Position Determination Microscopy = SPDM). T s were fixed after different repair times for SPDM im positioning of antibodies specific for heterochromal	oteins in cell nuclei l 'he cells were expos aging. In addition to	by means of h sed to ionizing the repair	igh		
		Experimental data was acquired in the E Margund Bach and Rainer Kaufmann.	Experimental Biophysics group by Michael Hausmar	nn, Patr <mark>ick Müller,</mark> Sa	abina Hillebra	ndt,		
			imental data and the maskings of the regions of int f the Statistical Physics and Theoretical Biophysics		KDEs were			
Related Publi	ication		5, Krufczik M, et al. (2015) Radiation Induced Chron , Statistical Physics, and Graph Theory. PLoS ONE			lysed		
Dataset Versi	on: 3.0							
Files Met	adata Terms	Versions						



					IDELBERG ZUKUNFT SEIT 1386		Findabil	-
hei <mark>DA</mark> T	A				٩	. Support Sign Up Log In	- DO)l's
Experir	nental Biop	physics D	ataverse (He	delberg University - Kirchhoff-In	stitute for Physics)			
eiDATA D	ataverse > Ex	perimental E	Biophysics Data	verse > SPDM data capturing	radiation induced chromatin conformation changes			
de Metric	s 7	0 Dow <mark>n</mark> loads				× C		
PDM	data capt	uring ra	adiation in	duced chromatin co	nformation changes			
	ta capturing r			bina; Bach, Margund; K <u>aufmanr</u> conformation changes <mark>, doi:10.</mark>	11588/data/10031, neiDATA	E Cite Dataset •		
			prot resc radi dep SPE Expr Mar		romatin Conformation Changes Analysed by Flu Patrick Müller, Sabina Hillebrandt, Matthias Krufczik, Marg Citation: Zhang Y, Máté G, Müller P, Hillebran Radiation Induced Chromatin Conformation Ch Localization Microscopy, Statistical Physics, e0128555. doi:10.1371/journal.pone.0128555	und Bach, Rainer Kaufmann, dt S, Krufczik M, Bach M, et al. (20 anges Analysed by Fluorescent	15)	₽ PL
Ker calc		Materials and Methods Results	Academic Editor: Martin Fernandez-Zapico, Schulze Center for Novel Therapeu Mayo Clinic, UNITED STATES		cs,			
			by F 10.1	Discussion Acknowledgments	Received: October 18, 2014; Accepted: April	5		
Dataset Version: 3.0				Author Contributions References	Contributions Copyright: © 2015 Zhang et al. This is an open access article distributed unde			
Files	Metadata	Terms	Versions	Figures the analys	ilability: The experimental data and sis can be reached through the HeiD 588/data/10031.	I the in-house develope	d software used	for

4**eu**+

Title \varTheta	GECCA mapped
Subtitle 😧	Mapping Western Group Exhibitions of Contemporary Chinese Art after 1979
Author 😌	Franziska Koch (Heidelberg Centre for Transcultural Studies, Global Art History, Heidelberg University, Germany)
Contact 😧	Use email button above to contact.
	Franziska Koch (Heidelberg Centre for Transcultural Studies, Global Art History, Heidelberg University, Germany)
Description	GECCA mapped is a pilot project that visualizes and provides geo-referential metadata of sixty exhibition entries collected in the larger GECCA data base (more than 700 entries). The exhibition sample is limited to Western i.e. Western European and Northerm American group exhibitions, and excludes bi-/ triennials. With the support of the HRA (Heidelberg Research Architecture), GECCA mapped allows the user to trace the exhibition sample implemented in Google Earth. The GECCA mapped logo indicates the place where a particular exhibition was staged and is scaled according to the number of participating artists. A click on the logo opens a pop-up window presenting more information on the exhibition. The Google Earth timeline enables the user to follow the exhibition development in any chosen geographical area in the period from 1982 (earliest exhibition entry) to 2009 (latest exhibition shas played a fundamental role in creating a global context for Chinese art within and outside of the People's Republic after the end of the "Great
	Proletarian Cultural Revolution" (1966-1976) and since of the political reforms initiated by Deng Xiaoping in 1978/79. In economic, discursive, aesthetic and institutional terms, the Western reception of these shows was very influential for the establishment of a certain international canon of artworks, artists and curators. This particular canon in fact came to be considered representative of the whole of Chinese artistic production, although it actually tends to exclude large parts of the overall artistic activity such as "national ink painting" (guohua), conventional or conservative academic oil painting, as well as those works involving political or consumption oriented subject matter, including mass-produced decorative and popular artworks.
	With 60 exhibitions entries, the data that GECCA mapped visualizes is a comparatively small sample of the database GECCA - which contains more than 700 exhibition entries. The data was individually researched and includes information on the location, institution, dates, exhibition topic, participating artists and curators. The sources for the data stem from exhibition catalogues, museum websites, archival documentation of public art libraries and other archives.
	A typical use of the kmz-file that visualizes GECCA mapped is Google Earth.
Subject 😧	Arts and Humanities
Keyword	contemporary Chinese art group exhibitions North America (general region) (TGN) http://vocab.getty.edu/tgn/7029440 Europe (continent) (TGN) http://vocab.getty.edu/tgn/7000093 Australia (nation) (TGN) http://vocab.getty.edu/tgn/7000490 Art, Chinese20th centuryExhibitions (LCSH) http://id.loc.gov/authorities/subjects/sh2007101410 GECCA mapped Geographic information systems (LCSH) http://id.loc.gov/authorities/subjects/sh90001880 Digital mapping (LCSH) http://id.loc.gov/authorities/subjects/sh85037980
Related Publication 😡	Koch, Franziska. 2016. "Die »chinesische Avantgarde« und das Dispositiv der Ausstellung: Konstruktionen chinesischer Gegenwartskunst im Spannungsfeld der Globalisierung". Bielefeld: franscript. isbn: 978-3-8376-2617-9 http://www.transcript- verlag.de/978-3-8376-2617-9/die-chinesische-avantgarde-und-das-dispositiv-der-ausstellung

Findability

- DOI's
- Metadata

Chinoso: English

4**eu**+

Title 😯	GECCA mapped
Subtitle 😯	Mapping Western Group Exhibitions of Contemporary Chinese Art after 1979
Author 😧	Franziska Koch (Heidelberg Centre for Transcultural Studies, Global Art History, Heidelberg University, Germany)
Contact 😌	Use email button above to contact.
	Franziska Koch (Heidelberg Centre for Transcultural Studies, Global Art History, Heidelberg University, Germany)
Description	GECCA mapped is a pilot project that visualizes and provides geo-referential metadata of sixty exhibition entries collected in the larger GECCA data base (more than 700 entries). The exhibition sample is limited to Western, i.e. Western European and Northern American group exhibitions, and excludes bi-/ triennials. With the support of the HRA (Heidelberg Research Architecture), GECCA mapped allows the user to trace the exhibition sample implemented in Google Earth. The GECCA mapped logo indicates the place

where a particular exhibition was staged and is scaled according to the number of participating artists. A click on the logo opens a pop-up window presenting more information on the exhibition. The Google Earth timeline enables the user to follow the exhibition development in any chosen geographical area in the period from 1982 (earliest exhibition entry) to 2009 (latest exhibition entry). Group Exhibitions of Contemporary Chinese Art (GECCA): The medium of (group and panoramic) exhibitions has played a

fundamental role in creating a global context for Chinese art within and outside of the People's Republic after the end of the "Great Proletarian Cultural Revolution" (1966-1976) and since the political reforms initiated by Deng Xiaoping in 1978/79. In economic, discursive, aesthetic and institutional terms, the Western reception of these shows was very influential for the establishment of a

certain international canon of artworks, artists and curators. This parti the whole of Chinese artistic production, a "national ink painting" (guohua), convention consumption oriented subject matter, incl

Chinoco: English

DOI's -

Findability

Metadata -

the whole of Chinese artistic production, although it actually tends to e "national ink painting" (guohua), conventional or conservative academ	Life Sciences Metadata 🔨					
consumption oriented subject matter, including mass-produced decore	Design Type 🚱	Not Specified				
With 60 exhibitions entries, the data that GECCA mapped visualizes is which contains more than 700 exhibition entries. The data was individu	Factor Type \varTheta	Cell Type/Cell Line; Developmental Stage; Organism				
institution, dates, exhibition topic, participating artists and curators. Th	Organism 😧	Homo sapiens; Mus musculus				
museum websites, archival documentation of public art libraries and o	Other Organism 🚱	Monodelphis domestica				
A typical use of the kmz-file that visualizes GECCA mapped is Google	Measurement Type 🚱	transcription profiling				
Arts and Humanities	Technology Type 😣	nucleotide sequencing				
contemporary Chinese art	Other Technology Type 😣	single nucleus RNA-seq				
group exhibitions North America (general region) (TGN) http://vocab.getty.edu/tgn/7029	Technology Platform 🚱	Illumina				
Europe (continent) (TGN) http://vocab.getty.edu/tgn/1000003 Australia (nation) (TGN) http://vocab.getty.edu/tgn/7000490	Other Technology Platform \varTheta	10x Chromium 3' protocol				
Art, Chinese–20th century–Exhibitions (LCSH) http://id.ioc.gov/author GECCA mapped Geographic information systems (LCSH) http://id.ioc.gov/authorities/subje Digital mapping (LCSH) http://id.ioc.gov/authorities/subjects/sh85037980						

Related Publication 🚱

Koch, Franziska. 2016. "Die »chinesische Avantgarde« und das Dispositiv der Ausstellung: Konstruktionen chinesischer Gegenwartskunst im Spannungsfeld der Globalisierung". Bielefeld: transcript, isbn: 978-3-8376-2617-9 http://www.transcriptverlag.de/978-3-8376-2617-9/die-chinesische-avantgarde-und-das-dispositiv-der-ausstellung

Subject 😯

Keyword 😯

eu+

Google Schola		Q		Findability
 Artikel 	Ungefähr 31.400 Ergebnisse (0,23 Sek.)			- DOI's
Beliebige Zeit Seit 2022 Seit 2021 Seit 2021 Seit 2018 Zeitraum wählen Nach Relevanz sotieren Nach Datum sontieren Beliebige Sprache Seiten auf Deutsch Alle Typen Übersichtsarbeiten	Immuj Peer Reviewed: Current Knowledge on Correlations Betw Prevalent Dental Conditions and Chronic Diseases: An Umbh MW Seitz, Statt, A Bartol, I, Schuber, chronic disease, 2019 ncbi.nin n. We provide an oveniew of systematic reviews reporting on correlations between conditions and chronic diseases with an assessment of the evidence and extent of \$\$ periods. We provide an oveniew of systematic reviews reporting on correlations between conditions and chronic diseases with an assessment of the evidence and extent of \$\$ periods. We provide an oveniew of systematic reviews reporting on correlations. We provide an oveniew of systematic reviews reporting on correlations. We provide an oveniew of systematic reviews. We provide an oveniew of systematic reviews. We provide an oveniew of systematic reviews. Base of a 2 0 o We provide an oveniew of systematic reviews. My Setz. Light. A Barols. Corrolations with a dental condition was diabets mellius. You's doma correlations. Oppe 2 and periodontitis and cardiovascular disease. Freque \$\$ Speichem 99 Zitieren Zitiet von: 1 Åhniche Artikel Alle 2 Versionen %	rella Review h.gov dental if correlation eb of Science. 27 00	(HTML) nih.gov [HTML] uni-heidelberg.de GUIDELINES •	 Metadata Indexing in catalogs and databases (enabling automation harvesting of metadata)
			Jnderstanding Bank-Run	
gesis <mark>DataSe</mark> ar	ch	C Social	👍 Dataset 🎽	Communities
1 results found	Advanced History Finvorites	Facebook	Understandi	ing Bank-Run Contagion [Dataset]
Add to favorites T	Al languages O en All languages O en All languages O en All languages O en All languages All lang		under which inform based depositor-rur another bank by inc. them more likely to thus contagious, wh	ental coordination games to examine through which transmission channels, and nation conditions, a panic-based depositor-run at one bank trigger withdrawals at creasing players' beliefs that other depositors in their own bank will withdraw, making withdraw as well. Observed withdrawals only affect depositors' beliefs, and are then they form an informative signal about bank fundamentals. Contagion Social Sciences Systemic risk https://doi.org/10.11588/data/10074



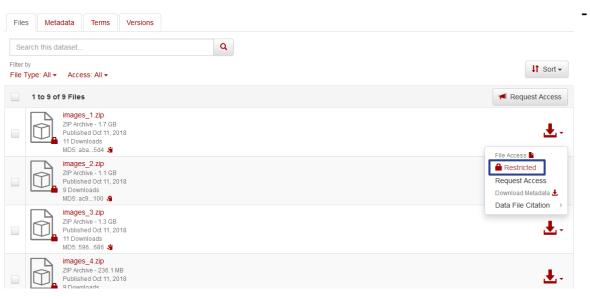
english Data TEL case study

File	es Metadata Terms Versions	
Cha	ange View Table Tree	
Se	earch this dataset Q	
Filter File	by Type: All ← Access: All ← File Tag: All ←	↓↑ Sort -
	1 to 10 of 116 Files	🛃 Download 🗸
	OO_data.usage.pdf 0000_README/ Adobe PDF - 48.2 KB PUblished Oct 28, 2020 6 Downloads MD5: 179109 S OwnReality Data Overview README Documentation	<u>↓</u> .
	OO_README pdf 0000_README/ Published ot 28, 2020 6 Downloads MD5: 6deb85 • Description of origin, structure and use of the data in the dataset. README Documentation PDF	<u>↓</u> .
	O_xml_files_overview.tab 0000_README/ Tabular Data - 12.1 KB Published Oct 28, 2020 4 Downloads 4 Variables, 112 Observations UNF:6:X76dvpg== \$ Overview of the XML-Documents Documentation CSV	File Access
	Casestudy_01_23647_ArnouxIntro_fr.xml casestudy_01/ XML - 112.0 KB Published Oct 26, 2020 4 Downloads MDD: 90cc3.3 french Data TEI case study	Download Options 🛓 Comma Separated Values (Original File Format) Tab-Delimited RData Download Metadata 🛓
	Casestudy_01_47_ArnouxIntro_en.xml casestudy_01/ XML - 104.5 KB Published Oct 28, 2020 4 Downloads MD5: 42b287 Text production of the project OwnReality	Variable Metadata Data File Citation

Accessibility

- Download of public files via browser or via API





Accessibility

- Download of public files via browser or via API
 - "As open as possible, but as closed as necessary"



Unpublished Dataset Private URL – Privately share this dataset before it is published: https://heidata.uni-heidelberg.de/privateurl.xhtml?token=ffb013cb-25ae-46f0-904d-381190a8ca13

Test Dataset

Draft Unpublished



Apel, Jochen, 2022, "Test Dataset", https://doi.org/10.11588/data/CKSXU7, heiDATA, DRAFT VERSION 3

Cite Dataset -

set
- Learn about Data Citation Standards.

Accessibility

- Download of public files via browser or via API
- "As open as possible, but as closed as necessary"
- Private URLs for pre-publication access (e.g. for reviewers)



Interoperability

Metadata standards

Metadata References

The Dataverse Project is committed to using standard-compliant metadata to ensure that a Dataverse installation's metadata can be mapped easily to standard metadata schemas and be exported into JSON format (XML for tabular file metadata) for preservation and interoperability.

Detailed below are what metadata schemas we support for Citation and Domain Specific Metadata in the Dataverse Project:

- Citation Metadata: compliant with DDI Lite, DDI 2.5 Codebook, DataCite 3.1, and Dublin Core's DCMI Metadata Terms (see .tsv version). Language field uses ISO 639-1 controlled vocabulary.
- Geospatial Metadata: compliant with DDI Lite, DDI 2.5 Codebook, DataCite, and Dublin Core (see .tsv version). Country / Nation field uses ISO 3166-1 controlled vocabulary.
- Social Science & Humanities Metadata: compliant with DDI Lite, DDI 2.5 Codebook, and Dublin Core (see .tsv version).
- Astronomy and Astrophysics Metadata : These metadata elements can be mapped/exported to the International Virtual Observatory Alliance's (IVOA) VOResource Schema format and is based on Virtual Observatory (VO) Discovery and Provenance Metadata (see .tsv version).
- Life Sciences Metadata: based on ISA-Tab Specification, along with controlled vocabulary from subsets of the OBI Ontology and the NCBI Taxonomy for Organisms (see .tsv version).
- Journal Metadata: based on the Journal Archiving and Interchange Tag Set, version 1.2 (see .tsv version).

See also the Dataverse Software 4.0 Metadata Crosswalk: DDI, DataCite, DC, DCTerms, VO, ISA-Tab document and the Metadata Customization section of the Admin Guide.



File	s Metadata Terms Versions	
Se	arch this dataset Q	
Filter File	^{by} Type: All ← Access: All ← File Tag: All ←	↓↑ Sort -
	1 to 7 of 7 Files	Ł Download
	dwg_cdr_part1.zip ZIP Archive - 1.5 GB Published Feb 23, 2016 48 Downloads Hob sostot - Hob sostot - Data	<u>↓</u> .
	dwg_cdr_part2.zip ZIP Archive - 1.4 GB Published Feb 23, 2016 17 Downloads MD5: 20a.a84d € Part2, CorrelDraw (original format) Date	<u>↓</u> .
	dwg_part3.zip ZIP Archive - 967.5 MB Published Feb 23, 2016 32 Downloads MD5: d51cd7 ● Pata	<u>↓</u> .
	dwg_svg_part1.zip ZIP Archive - 1.4 GB Published Feb 23, 2016 14 Downloads MBD 2B, wate 4 Pata	<u>↓</u> .
	dwg_svg_part2.zip ZIP Archive - 1.3 GB Published Feb 23, 2016 12 Downloads MD5: d25ac6 S Part2, Migrated to SVG format Data	<u>.</u> .

Interoperability

- Metadata standards
- Advice on suitable file formats, support with format conversion
- Technical validity checks



- Open content licenses

Files	Metadata	Terms	Versions	
Terms of	of Use 🔺			
Waiv	er 9	crea		lorms as well as good scientific practices expect that proper citation. Please use the data citation above, generated by
		No	vaiver has be	en selected for this dataset.
Terms of Use 🚱		Lice	nse (cc) BY	under Creative Commons Attribution 4.0 International ensed under General Public License v3 (GPL v3).



File	es Me	tadata	Terms	Versions			
							View Differences
	Dataset	t		Summary		Contributors	Published
	2.0	Author (Added, Metada	(1 Changed 2 Changed ata: (2 Adde	a: Description); Related Pu); Additional ed, 2 Change red: 2); View	Citation d); Files	Leonhard Maylein, Jochen Apel	Mar 26, 2021
	1.2		Citation Metadata: Description (1 Changed); View Details			Jochen Apel	Jun 7, 2019
	1.1	Additio View De		n Metadata:	(1 Added);	Jochen Apel	Jun 6, 2019
	1.0	This is t	he first pub	lished versior	۱.	Leonhard Maylein, Hubert Mara, Jochen Apel	Jun 6, 2019

- Open content licenses
- Transparent versioning



	-
Producer 😌	Hubert Mara (IWR, Heidelberg University) (HMara) https://orcid.org /0000-0002-2004-4153 Bartosz Bogacz (IWR, Heidelberg University) (BBogacz) https://orcid.org /0000-0002-2004-4153
Production Date 😣	2019-03-11
Production Place 😣	Heidelberg, Germany
Contributor 😯	Project Member : Bayer, Paul Victor
Deposit Date 😯	2019-02-25
Date of Collection 🕄	Start: 2018-07-24 ; End: 2018-08-22 Start: 2019-03-01 ; End: 2019-03-11
Kind of Data 😣	Cuneiform tablets; 3D Measurement data
Software 😯	GigaMesh Software Framework, Version: 181100 to 190300
Related Datasets 😣	Heidelberg Cuneiform 3D Database (HeiCu3Da) for the Hilprecht Collection: https://doi.org/10.11588/heidicon.hilprecht
Origin of Sources 😯	Hilprecht Sammlung, Jena, Germany, https://hilprecht.mpiwg-berlin.mpg.de/
	Cuneiform Digital Library Initiative (CDLI) https://cdli.ucla.edu/

- Open content licenses
- Transparent versioning
- Provenance information



Files N	Netadata Terms Versions	
Change Vie	ew Table Tree	
Search this	is dataset Q	
Filter by File Type: Al	II ← Access: All ← File Tag: All ←	It Sort-
1 to 1	10 of 116 Files	🛃 Download 🗸
	00_data usage pdf 0000_README/ Adobe PDF - 48.2 KB Published Oct 26, 2020 6 Downloads MD5:r79.r109_S OwnReality Data Overview README Dosumentation	<u>↓</u>
H H H H H H H H H H H H H H		<u>.</u>
	00_xml_files_overview.tab 0000_README/ Tabular Data - 12.1 KB Published Oct 26, 2020 4 Downloads 4 Variables, 112 Observations UNF:6:X76d_vpg== \$ December of the VIL-Documents Documentation L-SV	File Access 🔓 I Public
	casestudy_01_23647_ArnouxIntro_fr.xml casestudy_01/ XML - 112.0 KB Published Oct 26, 2020 4 Downloads MD5:90c_c3a \$ french Data TE case study	Commo Separated Values (Original File Format) Tab-Delimited RData Download Metadata
	casestudy_01_47_ArnouxIntro_en.xml casestudy_01/ XML - 104.5 KB Published Oct 26, 2020 4 Downloads MD5: 420_287 \$ Text production of the project OwnReality	Variable Metadata Data File Citation

- Open content licenses
- transparent versioning
- Provenance information
- Documentation files



Generic repositories





https://zenodo.org/

https://osf.io/

https://dataverse.harvard.edu/

https://figshare.com/

- Providing suitable technology for FAIR Data, partly even very elaborate functionality
- No or only basic domain-specific functionalities
- Only basic individual counselling
- Non-commercial and commercial providers



Wrap up

Managing data properly allows for reuse - by you or your community!

Managing data costs less than not managing it!

Manage data from the beginning of your research!

Manage data according to FAIR principles!

Use trustworthy data repositories!



Open for you!

An introduction series to open science

Everything you always wanted to know about open science but were afraid to ask!



Register for our upcoming events: https://4euplus.eu/4EU-273.html

Next sessions:

- "Open Research Software" | 21 March 2022, tba
- "Open science and the role of rights management" | 4 April, 2022, 12:30 14:00
- 4 further sessions after April 2022



Thank you!

Jochen APEL Paola GALIMBERTI Milan JANÍČEK

Open for you! An introduction series to open science | 7 March 2022











