

Data Libraries





Overview

- I. A brief history of data (and libraries)
- II. Current trends and developments
- III. Some examples
- IV. Conclusion





The Hats I Wear Today

- University of Göttingen (Germany), University Librarian
- Göttingen eResearch Alliance, Co-Director
- LIBER, European Library Association, Executive Board
 Also SC Scholarly Communication and Research Infrastructure (Chair)
- Research Data Alliance, RDA EUROPE, Advisory Board
- Credits; work I will show
 - University of Oxford, Bodleian Libraires (ex Associate Director)
 - University of Bielefeld (ex Chief Information Officer)



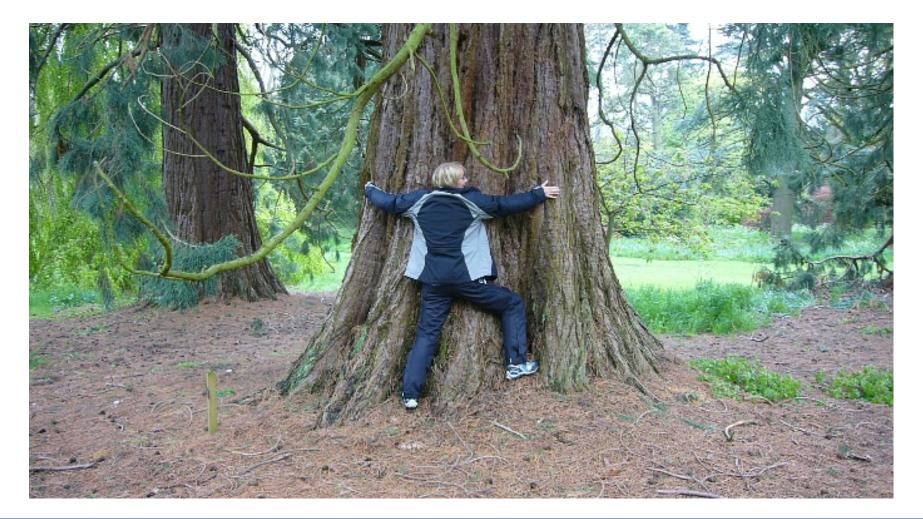
I. A BRIEF HISTORY OF DATA (AND LIBRARIES)



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Research data is highly context-specific.





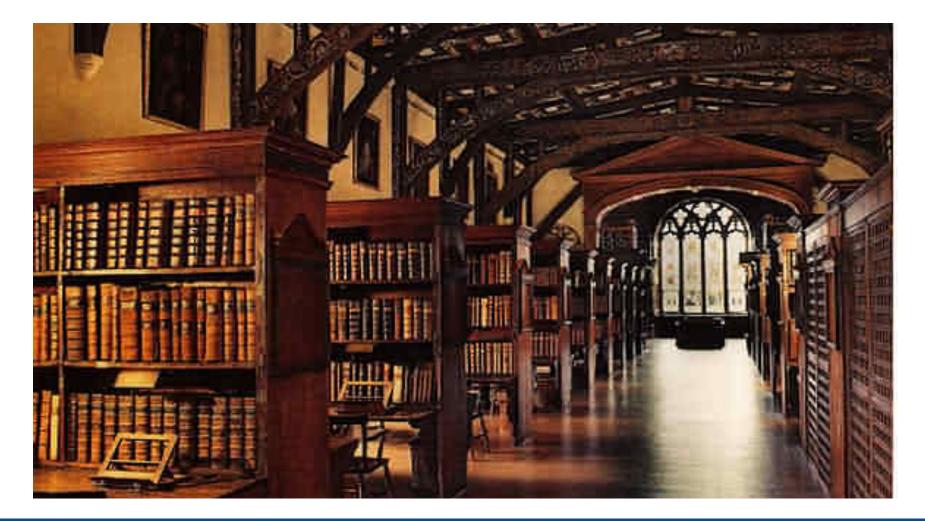
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NIEDERSÄCHSISCHE STAATS- UND | SUB

Research data is highly context-specific.









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The Separation of Libraries and Data through Labs

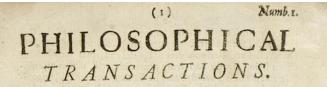
PHILOSOPHICAL TRANSACTIONS:* GIVING SOME ACCOMPT

· OF THE PRESENT Undertakings, Studies, and Labours

OF THE INGENIOUS CONSIDERABLE PARTS OF THE HIM (truid. W ORL

> Vol I. For Anno 1665, and 1666.

In the SAVOY, Printed by T. N. for John Martyn at the Bell, a little without Temple-Bar , and fames Allestry in Duck-Lane, Printers to the Royal Society.



Munday, March 6. 1663. 166 \$

The Contents.

. An Introduction to this Traff. An Accompt of the Improvement of Optick Glaffes at Rome. Of the Observation made in England, of a spot in one of the Belts of the Planet Jupiter. Of the motion of the late Comet predicted. The Heads of many New Obfervations and Experiments, in order to an Experimental Hiltory of Cold ; together with fome Thermometrical Difcourfes and Experiments. A Relation of a very odd Monstrous Calf. of a peculiar Lead-Ore in Germany , very useful for Estays. Of an Hungarian Bolus, of the fame effect with the Bolus Armenus. Of the New American Whale-fifting about the Bermudas. A Narrative concerning the fuccefs of the Pendulum-watches at Sea for the Longitudes ; and the Grant of a Patent thereupon. A Catalogue of the Philosophical Books publisht by Monlieur de Fermat, Connfellour at Tholoufe, lately dead.

The Introduction.

other parts of the World, do, from time to time, afford, as well A



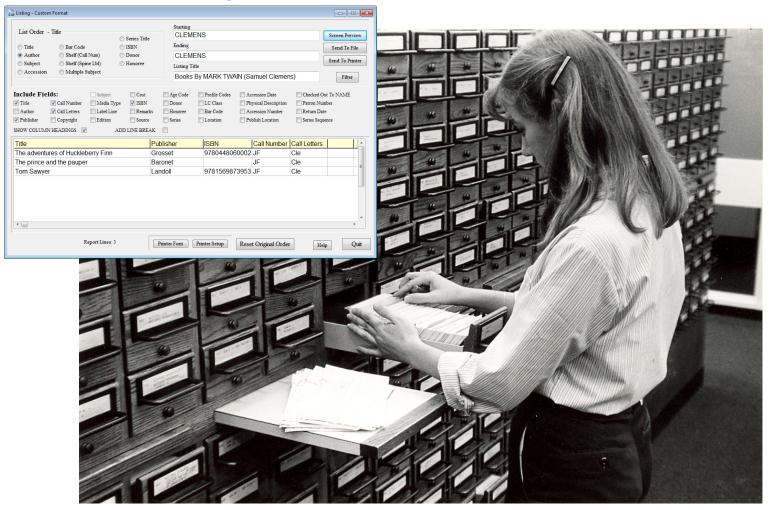
Hereas there is nothing more neceffary for promoting the improvement of Philosophical Matters, than the communicating to fuch, as apply their Studies and Endeavors that way, fuch things as are discovered or put in practice by others; It is therefore thought fit to employ the Prefs , as the most proper way to gratifie those, whole engagement in fuch Studies, and delight in the advancement of Learning and profitable Difcoveries, doth entitle them to the knowledge of what this Kingdom, or

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[Anlass der Präsentation]

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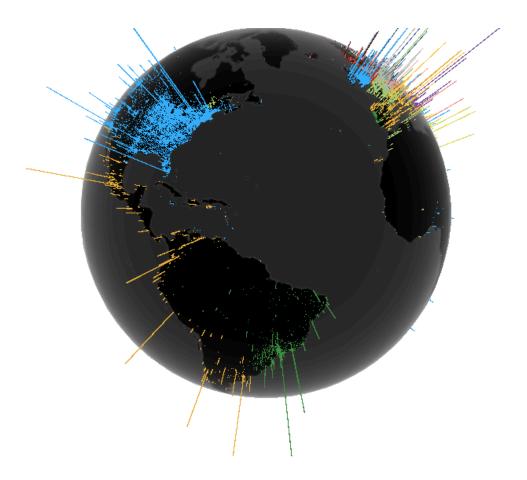




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NIEDERSÄCHSISCHE STAATS- UND \mid S L universitätsbibliothek göttingen \mid S L







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Professor Dr. Jochen J. Steil jsteil [at] CoR-Lab.uni-bielefeld.de View in Directory of Staff and Departments



Your Marked Publications

Publications		Data Publications						
[139]		lournal Article PUB-ID: 2698824 nt Policy Search in Low-dimensional Embedding Spaces by Generalizing	Mark	Search Publications				
	Motion	Primitives with a Parameterized Skill Memory		Search	Go!			
	Reinhar	rt F, Steil JJ (In Press)						
	Autonor	mous Robots .						
	PUB			Filter Publications				
[138]	2014 0	Conference Proceeding / Paper PUB-ID: 2685048	Mark	✓ Publication Type (6)				
	Model-1	free Path Planning for Redundant Robots using Sparse Data from Kines	thetic					





The library transcended its 'body'





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The library transcended its 'soul'

The GNU C Library - Top

Node: Yop Note introduction Previation Up eatin

Main Menu

This is Edition 0.06 DRAFT.3 Beta of the GNU C Library.	ast updated 24 October 1994. of The GNU C Library Reference Manual. for Version 1.09
- Introduction	Purpose of the ONU C Library.
Error Reporting	How the GNU Library functions report error conditions.
Momory Allegation	Your program can allocate memory dynamically and manipulate it via pointers.
Character Handling	Character testing and conversion functions.
Shing and Array Utilities	Utilities for copying and comparing strings and acrays.
Estanded Charactern	Support for extended character sets.
Locales	The country and language can affect the behavior of library functions.
Seambing and Serting	General exacting and exiting functions.
Pattern Matricing	Matching wildcards and regular expressions, and shall oflyle "word expansion".
120. Control of the	Introduction to the VO facilities.
5/000Amate	High-level, portable UO facilities.
Low Level 90	Low-level, less portable I/O.
File System Interface	Panotions for mempulating files.
Fiped and FiPOs	A simple interprocess communication mechanismi.
Becketz	A more complicated interprocess communication



The ambivalence of the "Digital Library"





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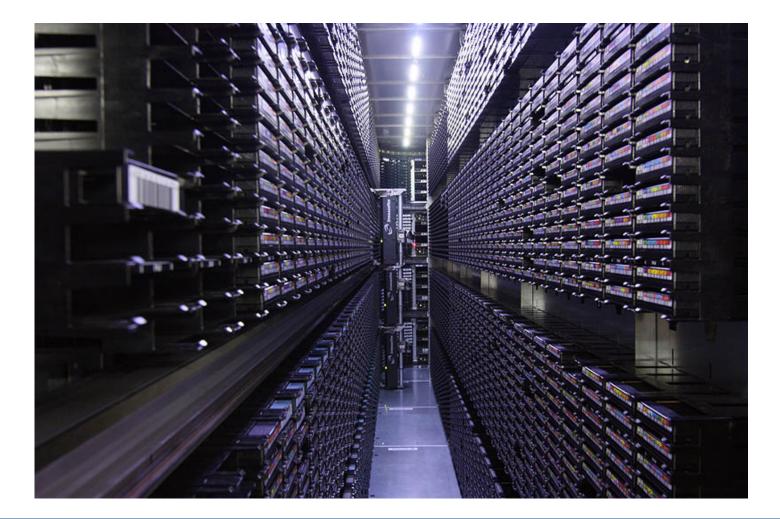
The ambivalence of the "Digital Library"

#preserving #linking #using #sharing

ACM/IEEE - CS Joint Conference on Digital Libraries



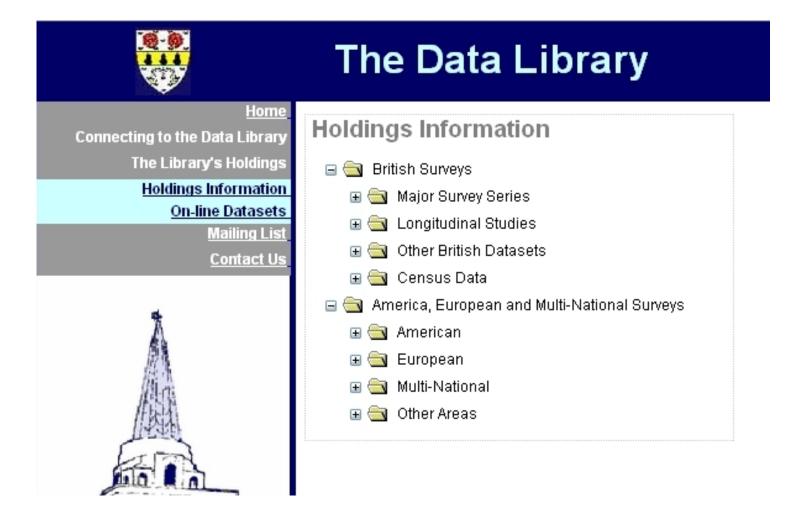
Research data libraries are manifold





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Research data libraries are manifold





Historical Challenge for Data

Research literature and research data need to be linked to stay a meaningful record of research

Libraries and data services need to provide durable business relations or consolidate

. . .



II. CURRENT TRENDS & DEVELOPMENTS



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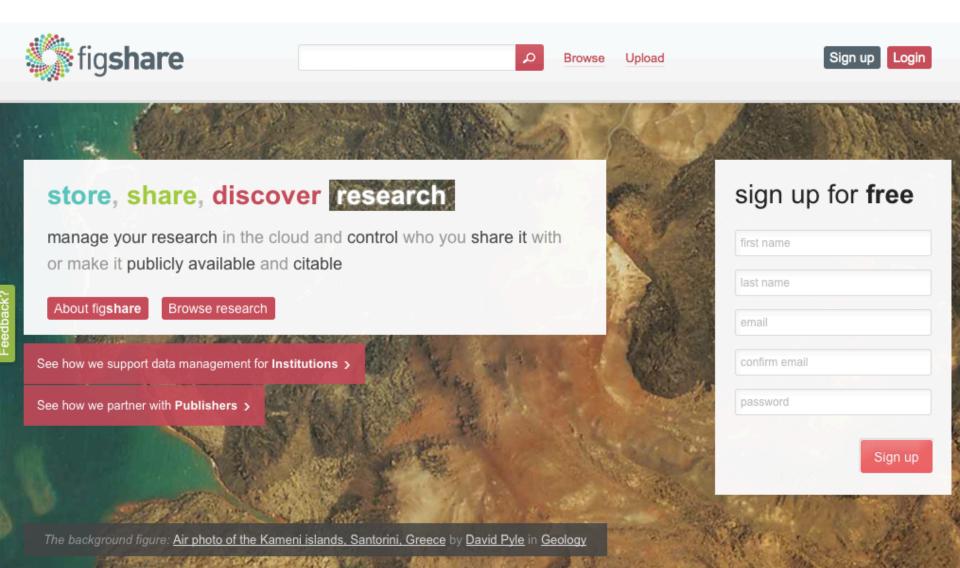


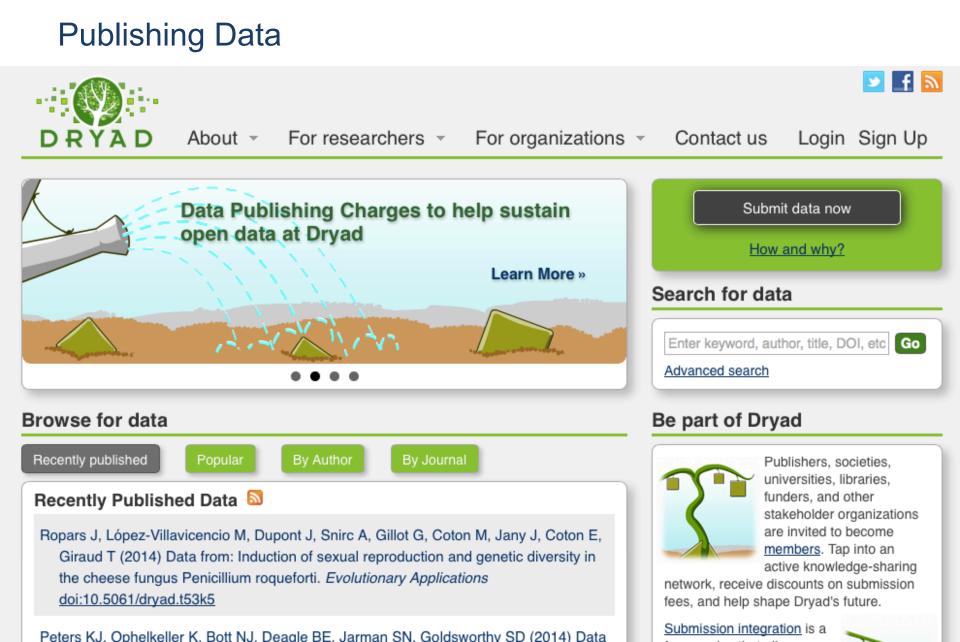
Brave New World of Research Data



© DAAD/Volker Lannert

Quick Sharing of Data Based Results





Writing a Data Paper



Can you help us with our publication layout? October 4, 2013

Alexander D. Perkins, Michael J.J. Lee &

maintenance



Zengchao Hao, Amir AghaKouchak, Navid Nakhjiri & Alireza Farahmand. 11 March 2014

Funder Policies – Many!

Full Coverage
Partial Coverage
No Coverage

	Policy Coverage		Policy Stipulations					Support Provided			
Research Funders	Published outputs	Data	Time limits	Data plan	Access/ sharing	Long- term curation	Monitoring	Guidance	Repository	Data centre	Costs
AHRC	٠	•		•	•	O	0	•	0	•	O
BBSRC	٠	•	•	•	•	•	•	٠	•	O	•
CRUK	٠	•	•	•	•	•	•	D	•	0	0
EPSRC	٠	•	•	•	•	•	٠	D	0	0	
ESRC	٠	•	•	•	•	•	٠	•	•	•	•
MRC	٠	•	•	•	•	•	0	D	•	0	•
NERC	٠	•	•	•	•	•	٠	•	•	•	•
STFC	٠	•	•	•	•	•	•	D	•	•	•
Wellcome Trust	٠	•	•	•	•	•	•	•	•	D	•





LIBER – European Library Association



Ten recommendations for libraries to get started with research data management

Final report of the LIBER working group on E-Science / Research Data Management



Research Data Alliance

- An international forum for all stakeholders in research data
- Organized in Interest Groups and Working Groups
- Libraries active in many contexts: massive BoF participation
- "Small Data" as a specific challenge: The "Long Tail" of Research Data







LERU – League of European Research Universities

LEAGUE OF EUROPEAN RESEARCH UNIVERSITIES

ADVICE PAPER No.14 - DECEMBER 2013

LERU ROADMAP FOR RESEARCH DATA



European Policy



PRESS RELEASE

Brussels, 17 July 2012

Open Access Infrastructure for Research in Europe

Scientific data: open access to research results will boost Europe's innovation capacity

The European Commission today outlined measures to improve access to scientific information produced in Europe. Broader and more rapid access to

- define open access to peer-reviewed publications as the general principle in Horizon 2020, either through open access publishing ('Gold' open access) or self-archiving ('Green' open access)
- promote open access to research data (experimental results, observations and computer-generated information etc.) and set a pilot framework in Horizon 2020, taking into account legitimate concerns in relation to privacy, commercial interests and questions related to large data volumes
- develop and support e-infrastructures to host and share scientific information (publications and data) which are interoperable on European and
 clobal level

open access to research data

European Union the European

<u>Research Area partnership for excellence and growth</u>', also being adopted today, which sets out key priorities for completing the European Research Area, including the optimal circulation, access to and transfer of scientific knowledge.

The European Commission will continue to fund projects related to open access. In 2012-2013, the Commission will spend €45 million on data infrastructures and research on digital preservation. Funding will continue under the Horizon 2020 programme. During the same period, the Commission will support experimentation with new ways of handling scientific information (e.g. new peer-review methods and ways of measuring article impact).

See also MEMO/12/565

""rine commission whit."

International Policy



- Share information on national research infrastructure priorities and prioritization processes; identify areas of potential benefit that could be achieved through sharing of best practices.
- Create a representative list of GRIs open to global cooperation of interest to new partners.

We invite the GSO to report in 2015 on their progress.

3. Open Scientific Research Data

Open enquiry is at the heart of scientific endeavour, and rapid technological change has profound implications for the way that science is both conducted and its results communicated. It can provide society with the necessary information to solve global challenges. We are committed to openness in scientific research data to speed up the progress of scientific discovery, create innovation, ensure that the results of scientific research are as widely available as practical, enable transparency in

science and engage the pu the set of principles for ope further discussions.

To the greatest extension scientific research date concerns in relation to the science of the scie



whilst acknowledging the legitimate concerns of private partners.





Part A: BIELEFELD



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Central RDM Activities

- Research Data Policy: "Principles"
- Coordination post funded by the University
- Focus group with leading academics
- <u>Colloquium</u> Knowledge Infrastructure
- Library in close cooperation with IT
 - Library provides curation and metadata support
 - IT Services provide servers and storage



Centrally Supported RDM actvitity

- Data-Service Centre "Business and Organisational Data"
- Infrastructure for Collaborative Research Project (50PIs, 12 Years)
 "From Heterogeneity to Inequality"
- Excellence Cluster "Cognitive Interaction Robotics" (100PIs, 10 years)
- Library Services: metadata, DOIs, software, calendars, websites...
- Storage and housing in IT Services





Research for Cognitive Interaction

Pr	roj	e	С	t	s	

View all issues | Overall spent time | Overall activity

3D Indoor Scenes Database

Articulated Scene Model

The software implements a state-of-the-art algorithm for three dimensional scene segmentation. The algorithm intends to build up a robust static background model of the scene and extracts moveable and highly dynamic objects in the foreground. For system integration the package also includes application nodes for middleware connection and grabbing/visualization purposes....

BielefeldTypeLibrary

BTL - The Bielefeld Type Library (BTL)

The Bielefeld Type Library (BTL) is a collection of XML-based data descriptions that are exchanged between components (e.g. lcewing) or systems (e.g. BIRON/ToBI). It provides functionality for parsing/creating data objects and is currently available in C++/Java. For more detailed info please refer to the wiki....

Bonsai

Bielefeld Sensor and Actuator Interface

BonSAI is a robot behavior abstraction layer written in Java. It aims to provide a simple interface to various functions of a robotic system and can define behaviors and skills according to these functions....

CITEC Gentoo Portage Overlay

This is a repository of gentoo ebuilds mostly of software packages developed within the University of Bielefeld (CITEC/CoR-Lab) but also of open source software from third parties. You may use this overlay, please do not hesitate to file bugs. Be aware to use this overlay at your own risk. ...

emblued

Projects

View	closed
projects	





Joint Publications of Subject Specialists and Library Staff



II SFB 882

Von Heterogenitäten zu Ungleichheiten



Uni Bielefeld » Faculty of Sociology » SFB 882 » Projects » Project INF

Navigation	Project INF	News			
Home	Information and Data Infrastructure	Besuch aus New York: Prof. Dr. Dalton Conley zu Gast im SFB			
Programme	People Summary Publications	882 17.06.2013			
Project Areas	- K - K - K				
Projects	Friedhoff, Stefan, Meier zu Verl, Christian, Pietsch, Christian, Meyer, Christian, Vompras, Johanna, & Liebig, Stefan (2013): Social Research	Neue Gastwissenschaftlerin im SFB 882: Prof. Dr. Elke Winter,			
Project A1	Data: Documentation, Management, and Technical Implementation within	University of Ottawa			
Project A2	the SFB 882. (SFB 882 Working Paper Series 16). DFG Research Center (SFB) 882 From Heterogeneities to Inequalities, Bielefeld.	Vortrag von Prof. Dr. Hans-			
Project A3	PUB PDF URL 🛌	Ulrich Wehler zum Thema			
Project A4	Friedhoff, Stefan, Meier zu Verl, Christian, Pietsch, Christian, Meyer,	"Soziale Ungleichheit in Deutschland"			
Project A5	Christian, Vompras, Johanna, & Liebig, Stefan (2013): Replicability and Comprehensibility of Social Research and its Technical Implementation.	18.04.2013			
Project A6	(RatSWD Working Paper Series 219). SCIVERO Press, Berlin.	≣all new			
Project B1	PUB URL 🔎				
Project B2	Meier zu Verl, Christian (2013): Der praktische Charakter wissenschaftlicher Theorien. Bericht von der GWTF-Jahrestagung.	Recent Publications			
Project B3	Technikfolgenabschätzung - Theorie und Praxis, 22(1), 106–108	Bilecen, Basak (2013): Analyzing Informal Social			
Project B4	PUB URL 🔎	Protection Across Borders: Synthesizing Social Network			
Project B5	Kramer, Stefan, Leahey, Amber, Southall, Humphrey, Vompras, Johanna, & Wackerow, Joachim (2012): Using RDF to Describe and Link Social	Analysis with Qualitative Interviews			
Project C1	Science Data to Related Resources on the Web. (German Council for Social and Economic Data (RatSWD) Working Paper Series , German	Schunck, Reinhard (2013): Within and between			
	contraction and a state (national) montaining i approximation	within and between			



Fakultät für Soziologie

Datenservicezentrum Betriebs- und Organisations **DATEN**



Inhalte	Willk	kommen 🗵	Verknüpfte Persone	en-Betriel	osdaten im Ansch	nluss an den AL	LBUS 2008 (Stu	udien-ID: allbus)	Suchergebnisse	
🕞 Studien-Navigation 📃		Kurzbeschr	eibung		Der inhaltliche Eoku	is der Betriebsbei	fragung lab auf S	ozialer Ungleichheit	innerhalb von Betrieben. S	
Verknüpfte Personen-Betriebsdaten im Anschluss an den ALLBU		Kurzbeach	elbung		Der inhaltliche Fokus der Betriebsbefragung lab auf Sozialer Ungleichheit innerhalb von Betrieben. S Allgemeine Betriebstrukturdaten, Marktposition des Betriebs, Mitbestimmung, Personalstruktur, Pers					
 ALLBUS 2008 ALLBUS Betriebsbefragung 2009 Beschäftigungsverhältnisse als sozialer Tausch BEATA Betriebsfallstudie BEATA Beschäftigten-Befragung 				Qualifikationsgruppen, Entlohnung, Arbeitsbedingungen sowie methodische Fragen und Information						
		Untersuchungsgegenstand			Betriebe					
		Sektor			Öffentlich und privat					
		Branchen		Keine Branchenauswahl						
		Untersuchungsgebiet		Deutschland						
E BEATA Partner und Partnerinnen-Befragung										
a 🔄 Betrieb und Beschäftigung im Wandel: Betriebliche Beschäftigung:	Durchführung									
SFB580-B2 Betriebspanel Welle 1	-		-							
E SFB580-B2 Betriebspanel Welle 2		Vorbereitende Maßnahmen		Dem Projekt vorgeschaltet war eine Pilotstudie im Rahmen einer rund 1000 Befragte umfassende						
SFB580-B2 Betriebspanel Welle 3					Panels (SOEP) 2007. Darin wurden aktuell erwerbstätige und arbeitslos gemeldete Personen nac					
Entwicklung und Validierung eines Diagnosewerkzeugs zur Erfas:			Betriebsstätte gefragt. Die angegebenen Adressen wurden bereinigt, so dass im Anschlus						dass im Anschluss die Bi	
InnoKenn Experteninterviews		Sampling								
≡ InnoKenn Fallstudien										
E InnoKenn Workshops		Auswahlverfahren		Ausgangspunkt waren die Befragten des ALLBUS 2008, die zum Zeitpunkt der Befragung in ein abhängig beschäftigt waren. Insgesamt waren dies 1.101 Personen. Davon machten 943 Persc						
Demografischer Wandel und der Arbeitsmarkt des öffentlichen Se	genannten Adressen wurden anschließend in einer Recherche überprüft.			ft. 719 Adressen konnte						
SFB580-B8 Intermediäre	entsprechenden Betriebe wurden kontaktiert. In 194 Fällen konnte schließli sich auf Betriebe, in denen zwei Beschäftigte an der ALLBUS Personenbefr									
E SFB580-B8 kommunaler Vertreter					Personalverantwortlicher oder Betriebsleiter befragt.					
E SFB580-B8 schulische Entscheidungsträger		Maßnahmen zur Erhöhung der Response Es wurden gezielt Interviewer eingesetzt, die eine langjährige Erfahrung mit Betriebsstudi						umit Betriebsstudien hab		
A balanced approach to understanding the shaping of human resc										
Abhängige Selbständigkeit in der Versicherungswirtschaft - Neue						Anzahl	Anzahl	Anteil erh.	Anteil erh.	
AEVO Betriebs- und Kammerbefragung 2007		Ebene			Anzahl	Personen pro	Personen pro	Mitglieder/Betr	Mitglieder/Betrieb	
Affective Complementarity in Service Encounters					Einheiten	Ebene (min.)	Ebene (max.)	(min.)	(max.)	
Aging Workforce Management in der Automobilindustrie. Definition		Betriebe			194					
Suche nach Studien	1									



Resolution

RDM Resolution

Resolution on Research Data Management

Bielefeld University is firmly committed to supporting its academics in implementing the 'Principles and guidelines on handling research data at Bielefeld University' from 19 July 2011 to promote a quality-assuring research data management.

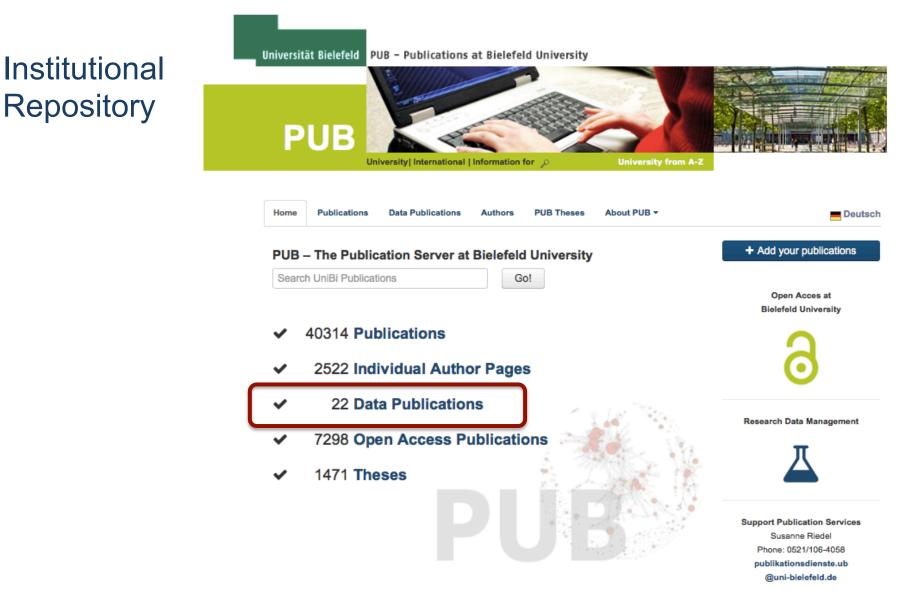
- The Rektorat requests applicants to take advantage of the university's advisory services – above all during the preparatory stage of any funding proposal requiring a data management plan (e.g. for the German Research Foundation, DFG)
- The Rektorat encourages academics to publish their research data through a registered research data archive within their discipline, or, if this is not available, through the research data repository of Bielefeld University. Publication should take the interests of persons and companies into account and be based on binding licensing conditions.

To fulfil **Point 1**, the **Coordination Centre** for Research Data at the Bielefeld University Library offers comprehensive advisory services on data management planning and continuous data documentation.

In line with **Point 2**, Bielefeld University Library supports faculties and academia to interlink existing data services with the worldwide network of data archives. At the same time, the institutional repository **PUB – Publikationen an der Universität Bielefeld** offers services for the publication of research data. Directories such as the DFG-funded "**Registry of Research Data Repositories**" also list appropriate locations for depositing data.

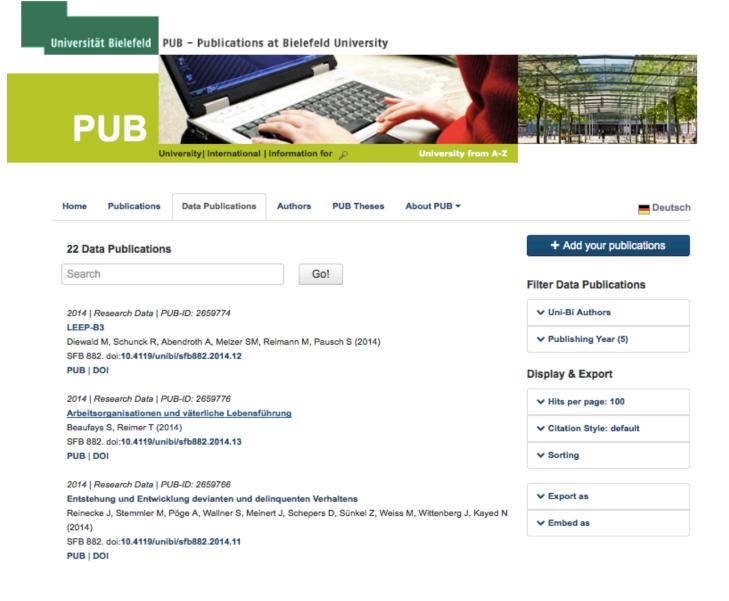
(adopted by the Rektorat in its session held on 12 November 2013)







Institutional Repository







Part B: Oxford III. SOME EXAMPLES



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RDM Policy

RESEARCH DATA MANAGEMENT



This site University of Oxford People



UAS Home > Research Data Management > Why manage your data? > University policy >

> Why manage your data?

University policy

- Funder policy
- Data Management Planning
- Data Backup and Security
- Data Sharing and Archive
- Training, Advice & Support

University of Oxford - policy on the management of research data and records

- 66
- "The University of Oxford seeks to promote the highest standards in the management of research data and records as fundamental to both high quality research and academic integrity"

(Source: Policy on the Management of Research Data and Records, July 2012)

In July 2012, Council approved a new policy on the management of research data and records. In support of this, guidance is available via this website on the RDM services already offered by the University (as well as some which are still under development), and news on training and advice offered to researchers on dealing with their data will also be communicated via this means.

Departments are encouraged to seek advice from their local I.T. support teams if they have immediate questions on how to deal with data storage or backup. If queries are more directly linked to funder requirements and how to meet expectations, researchers should contact their research facilitators in the first instance, or speak to <u>Kathryn Dally</u> in Research Services.

Related documentation includes a pdf of this policy, which is also laid out

Related documents

 University Policy on the Management of Research Data and Records 2 (219kb)

Related policies

- Academic Integrity in Research: Code of Practice and Procedure
- Policy on the ethical conduct of research involving human participants and personal data
- Intellectual property policy
- Data protection policy
- Freedom of Information policy
- Information Security Policy

RDM Working Group

- Chaired by PVC-R
- Representation of many stakeholders
 - Divisions
 - Libraries
 - IT Services
 - Research Services
- Many external and departmental activities
- Central services as fall-back



Multi-Agency Initiative

Research Services

Find funding *



Applying for funding +



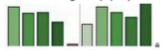
Research Facilities and Equipment *



Clinical Trials & Research Studies *



Business Intelligence (BI) Reports #







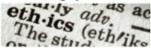
Costing and pricing +



Managing awards, reporting outcomes and Open Access *



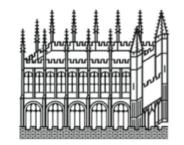
Research integrity and ethics *



Research Data Management site *



» MPLS



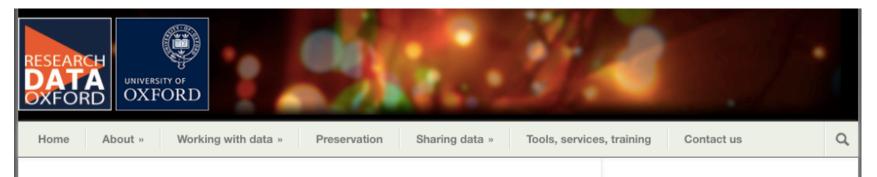




» Social Sciences



RDM Website



Data Support Services for Researchers



About RDM

An introduction to research data management, including policy expectations from some of Oxford's main funders.



Working with data

Guidance and links to tools and resources to help you manage your data day-to-day and at the project planning stage.





Useful Links

Ask a question - Contact Us

University RDM policy - download or view

Find out what funders expect - see the funder policies page

Latest news - Read the Oxford Research Data blog

Research Data Blog

New RDM course listing page *Feb 04, 2014*

Planning, Appraising, Ingesting and Documenting Data: UK Data Archive Training Workshop *Dec 16, 2013*

Part C: Göttingen



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[Anlass der Präsentation]

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Information Infrastructure at the Göttingen Campus

- Göttingen Campus
- IT Services: GWDG
- State and University Library Göttingen: SUB
- Research Data Policy
- Göttingen eResearch Alliance
 - Building on a strong tradition of collaboration
 - Sustainable Support at Seleceted Points in the Research Lifecycle
 - Consultations for Project Proposals
 - Pooling Infrastructure Specialists
 - IT Support, Publication Services, Research Data and Software Development







Building the Göttingen eResearch Alliance



NIEDERSÄCHSISCHE STAATS- UND UNIVERSITÄTSBIBLIOTHEK GÖTTINGEN



IV. CONCLUSION



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Conclusion

- Data joins literature in the authoritative record of research
- At campuses, a spirit of collaboration is emerging to tackle the challenge
- Libraries and service organisations provide "Data Libraries"
- An even stronger collaboration is needed nationally and internationally
- Disintegration is a threat to the reproducibility of research
- Literature and data need to form a reliably linked corpus





Thank you for your attention



