



Carnegie Mellon University

Trends in Academic Research Libraries in North America

Presenter

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Overview

- A few words about Carnegie Mellon University
- Academic research libraries today
- Deeper engagement with
 - Teaching and education
 - Faculty and students
 - Institutional Impact

Overview (2)

- Open Educational Resources
- Open Science Framework
- Research Information Management Systems

Carnegie Mellon University

- Private University Founded in 1900 by Andrew Carnegie
- Seven Colleges
 - College of Engineering
 - College of Fine Arts
 - Dietrich College of Humanities & Social Sciences
 - Heinz College of Information Systems & Public Policy
 - Mellon College of Science
 - School of Computer Science
 - Tepper School of Business

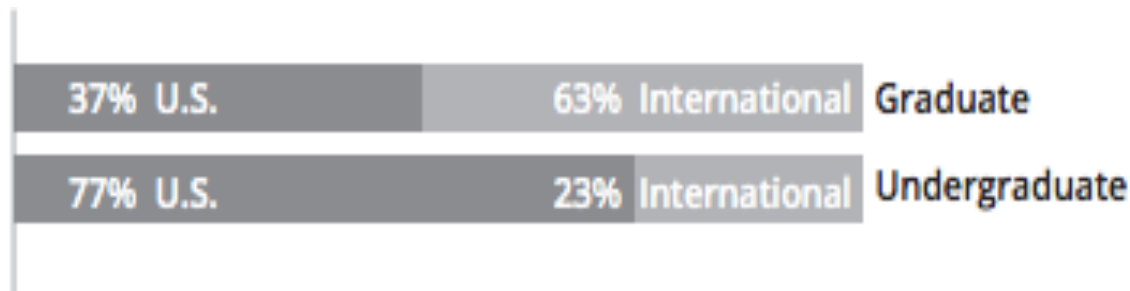


Carnegie Mellon University (2)

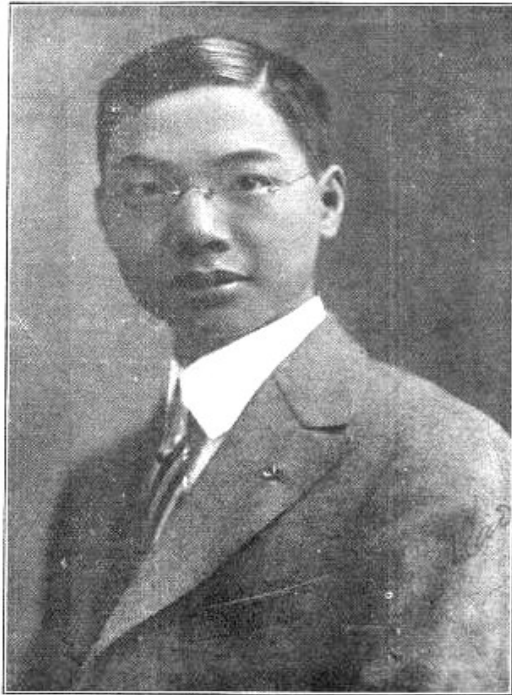
- Undergraduate Program in Doha, Qatar
- Additional graduate programs: Silicon Valley; CMU Australia; CMU Africa; CMU Portugal
- Joint programs established world-wide in China, Colombia, India, Italy, Japan, Mexico, Singapore, Turkey

Carnegie Mellon University (3)

- Student enrollment (Fall 2017)
 - 6840 Undergraduate students
 - 5637 Master's students
 - 1945 Doctoral students



CMU's First Ph.D. Graduate (1920) Mao Yisheng



Dr. Thomson Eason Mao
茅以昇字唐臣
(Mao I-sheng)



Perceptions about Libraries

- Tradition of books and journals
- Centuries connection to “liber”
- Looking back – manuscripts, codex, realia
- Transition with microfilm, microfiche, recordings, audio-visual, software (new demands, new skills)

Today's reality

- More than stewards of the historical record in print but actively engaged with information in all forms
- Just as books and journals are containers for information, information today is distributed in many other types of containers. Information is what is important not just its container.
- Proactive role – more than stewarding information but engaging in the research and publishing life-cycle

The Importance of Open

- Open Access; Open Educational Resources; Open Data; Open Research
- Progress in science, engineering, technology and medicine is enhanced when barriers to sharing are lowered
- Highest challenges for the human race – extreme weather events, natural disasters, failure of climate change mitigation and adaptation, global climate change, water crises, and freedom from hunger

Education & OER

- OER - What is it?
- Teaching and learning materials that can be freely used and reused
- Movement is a response to the high cost of commercial textbooks
- Participation can come from various constituents in higher education- faculty, librarians, researchers

Education & OER (2)

- Open educational resources – differing approaches
 - Open NYS (SUNY-CUNY) - State
 - Open Education Group - Affiliation
 - Open Textbook Network – National Network
 - openstaxTM - Private institution
 - SPARC (Connect OER) – National affiliation
- A few CMU examples



Openness is a state of mind for higher education in New York State. Open NYS is a collaboration between SUNY and CUNY University systems to showcase and support the use of Open Educational Resources (OER).

WHY DOES THIS MATTER?

- Free or low cost textbooks keep costs down for students.
- High quality, up-to-date content keeps your course fresh.
- Adapt content to work for your unique classroom.
- Permanent access allows student use after the course ends.
- It's the way the world should work!

SUNY OER Services provides support services, resources, and professional development to all committed campuses.

<https://textbooks.opensuny.org/>

OPEN EDUCATION GROUP

Socially responsive research that concretely improves society

Educational Research That Benefits Society

The Open Education Group is an interdisciplinary research group that (1) conducts original, rigorous, empirical research on the impact of OER adoption on a range of educational outcomes and (2) designs and shares methodological and conceptual frameworks for studying the impact of OER adoption. We also teach courses in topics relating to open education.

Our goal is to make the world a better place by increasing the affordability and effectiveness of education.

<https://openedgroup.org/>



openstax™

Access. The future of education .

Non-profit. Aims to improve student access to education.

Peer-reviewed. Free of Charge.

“OpenStax is breaking down the most common barriers to learning and empowering students and instructors to succeed.”

<https://openstax.org/>



Open Textbook Network

[HOME](#)[ABOUT US](#)[IMPACT & BENEFITS](#)[MEMBERSHIP ▾](#)[NEWS](#)

About Us

The Open Textbook Network (OTN) helps higher education institutions and systems advance the use of open textbooks and practices on their campuses.

We maintain the [Open Textbook Library](#), the premiere resource for peer-reviewed academic textbooks. All of our textbooks are free, openly licensed, and complete; their adoption creates a measurable, positive impact on student success.

With our members, we move the open education conversation forward on local and national levels.

<http://research.cehd.umn.edu/otn/>

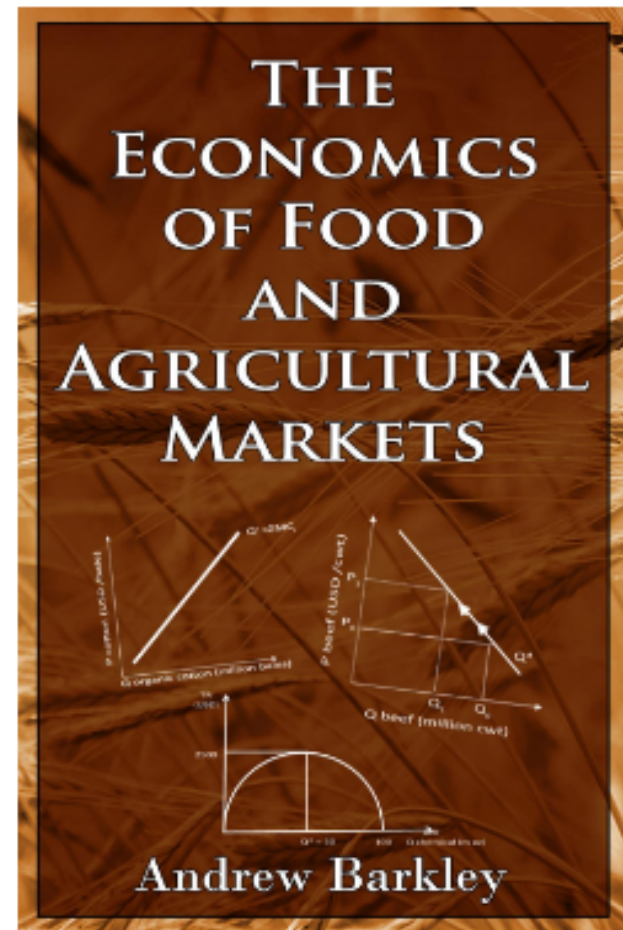


Open Textbook Library

Introduction to Permaculture



<http://open.umn.edu/opentextbooks/>



Open Textbook Library - Criteria

- Has an open license that allows for derivatives
- Is a complete book (not individual chapters) available as a portable file (e.g. PDF, ePub)
- Is currently in use at multiple higher educational institutions, or affiliated with a higher education institution, scholarly society, or professional organization
- Is an original textbook (not a derivative of another textbook) or is for an entirely new audience

The SPARC logo is displayed on a dark grey rectangular background. The word "SPARC" is in white, bold, sans-serif capital letters. To the right of "SPARC" is a red asterisk-like symbol composed of six lines meeting at a central point.

SPARC PROJECTS

Connect OER

Open Education

Platform to share and discover information about OER activities across North America.

<https://sparcopen.org/our-work/connect-oer/>

Opening books to students at CMU & the world

Four models

1. Published book. Securing publisher permission to post the final proof
2. Published book. Reclaiming the copyright from the publisher
3. Self published and posted to institutional repository
4. Published book with open access copy available at publisher's website

Model One

Pragmatics of Uncertainty

by

Joseph B. Kadane

(<http://www.stat.cmu.edu/~kadane/pragmatics.pdf>)

Principles of Uncertainty

by

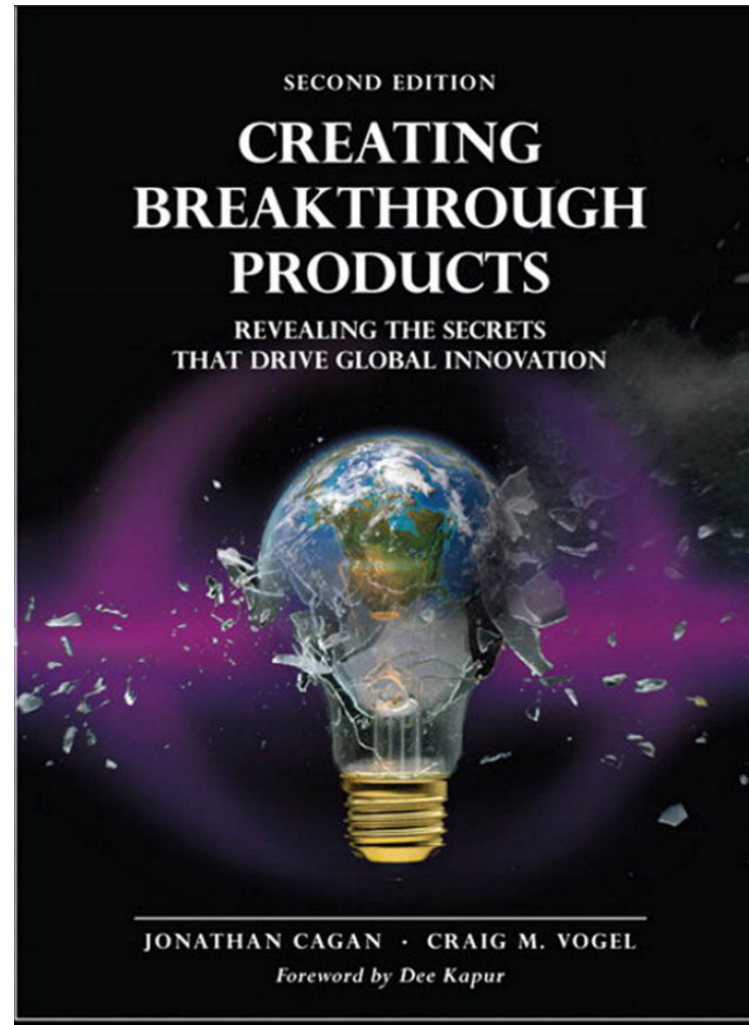
Joseph B. Kadane

(<http://www.stat.cmu.edu/~kadane/principles.pdf>)

Model Two

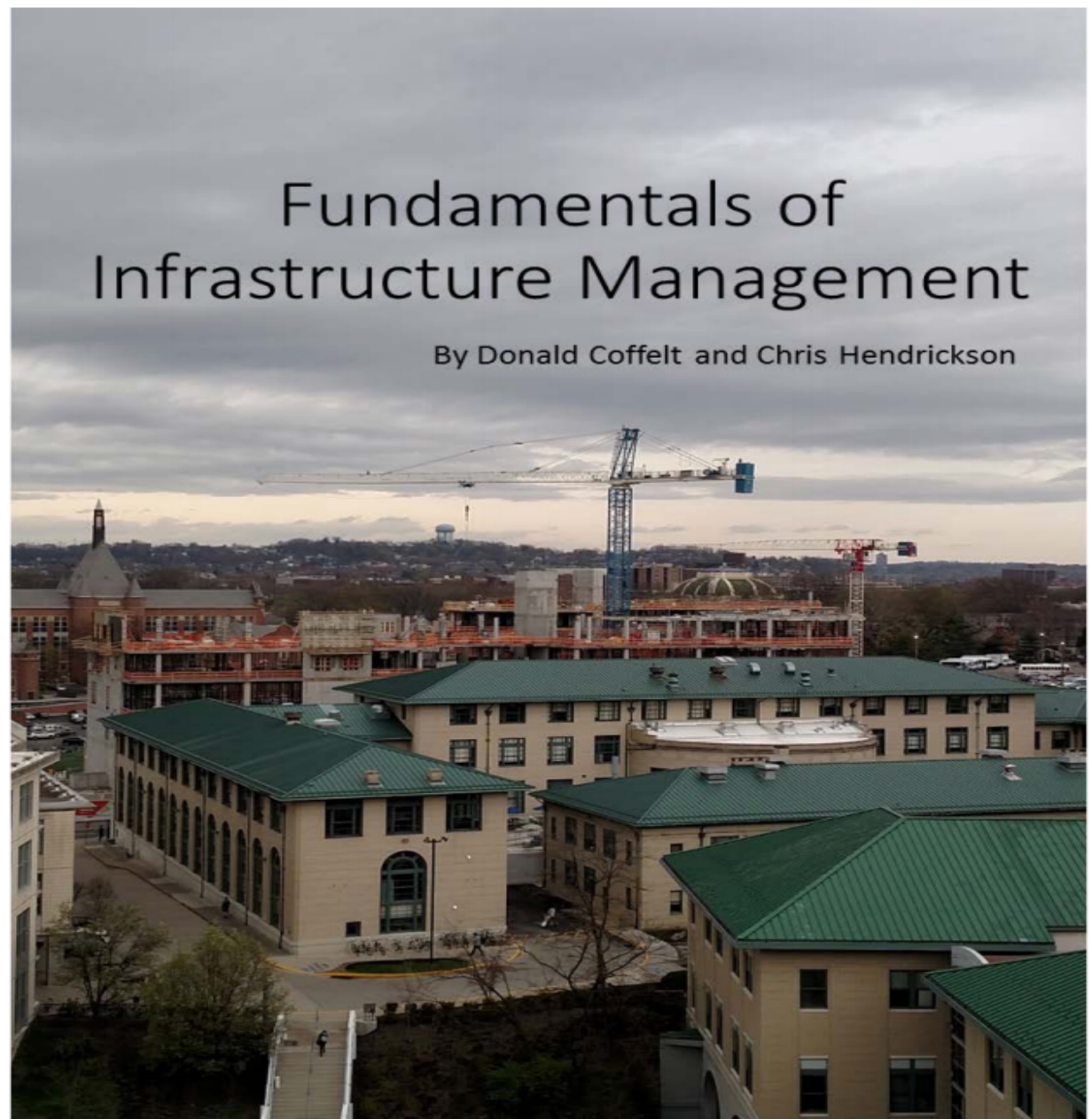
Author reclaims
copyright from
publisher. Uploads
revised work to
institutional
repository

Cagan, Jonathan, and Craig M. Vogel.
“Creating Breakthrough Products: Revealing
the Secrets That Drive Global Innovation”.
figshare, January 16, 2018.
<https://doi.org/10.1184/R1/5788092.v1>.

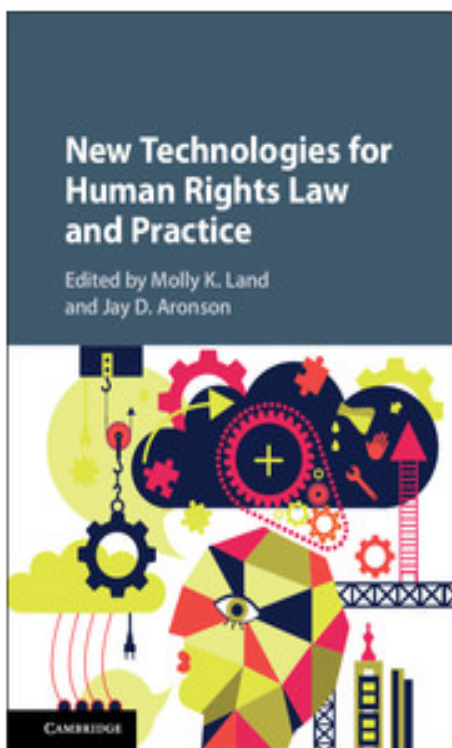


Model Three

Self Published
&
Uploaded to
Institutional
Repository



Model Four – Book published and Open Access available simultaneously at publisher's website



✓ Access 🔓 Open access

Edited by [Molly K. Land](#), *University of Connecticut School of Law* , [Jay D. Aronson](#), *Ca Pennsylvania*

Publisher:

Cambridge University Press

Online publication date:

April 2018

Print publication year:

2018

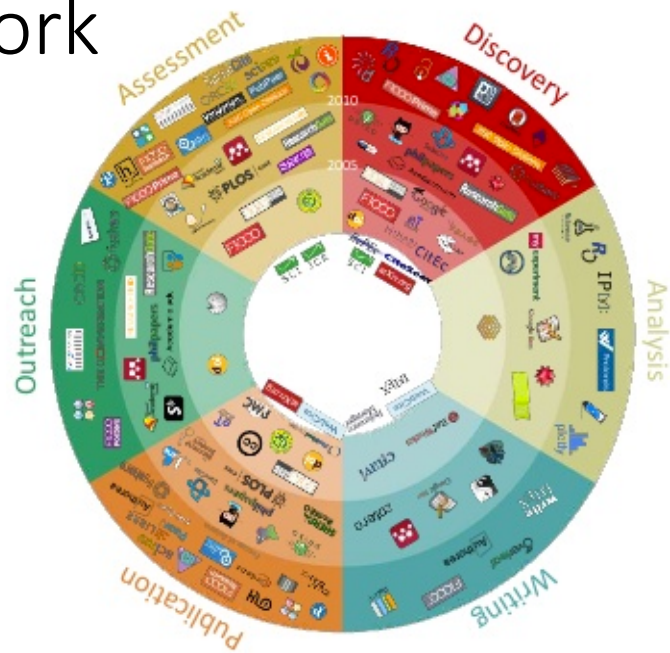
Online ISBN:

9781316838952

<https://doi.org/10.1017/9781316838952>

Engagement with the Research Process

- Expanded Role of Institutional Repositories
- Research Data Services
- Open Science Framework



Institutional Repositories – a home for research and publication

- First iteration named *Research Showcase*
- Operated on the BEPress platform
- Repository
 - Requested by Faculty Senate
 - Supported by the Office of the Provost
 - Operated by the University Libraries
 - Goal to increase access and visibility to CMU work
- Contains articles, conference papers, presentations, theses, dissertations and technical reports

Institutional Repository Maturation

- New platform for more diverse content and services
- Runs on the figshare platform
- Rebranded as KiltHub (<https://kilthub.figshare.com/>)
- Component of the research information system, Digital Science
- Content expanded from articles, conference papers, presentations, theses, dissertations and technical reports to now include posters, books, datasets, figure, media, fileset, code.



Research Data Management

- North American federal agencies mandated that data management plans must be a component of applications for funding
- Furthermore, data generated by research underwritten by federal or governmental funds must be open and available
- Institutional repositories play a crucial role in the absence of disciplinary data repositories
- Emerging new roles for libraries

Research Data Services

Grant Support

- Pre-proposal consultation for writing Data Management Plans (DMPs)
- Customized strategies for data management planning & implementation
- DMP Tool, with templates for specific funding agencies & a standard DMP template for CMU
- Up-to-date information on [funding agency requirements](http://www.library.cmu.edu/datapub/dms/services) for data.

(<http://www.library.cmu.edu/datapub/dms/services>)

Research Data Services (2)

Data Management

- Best practices for organizing, describing, sharing, publishing, & preserving data
- Standards for file naming, metadata, storage, security & documentation
- Data management needs assessment
- Consultations for research data management practices
- Data management planning for projects or publications

(<http://www.library.cmu.edu/datapub/dms/services>)

Research Data Services (3)

Education & Outreach

- Data literacy education for students & research groups
- Advice on lab protocols to ensure continuity in the research group
- Educational resources & customized training in partnership with other CMU resources
- Collaboration with faculty as active grant participants on research projects & workshops

(<http://www.library.cmu.edu/datapub/dms/services>)

Research Data Services (4)

Data Sharing & Reuse

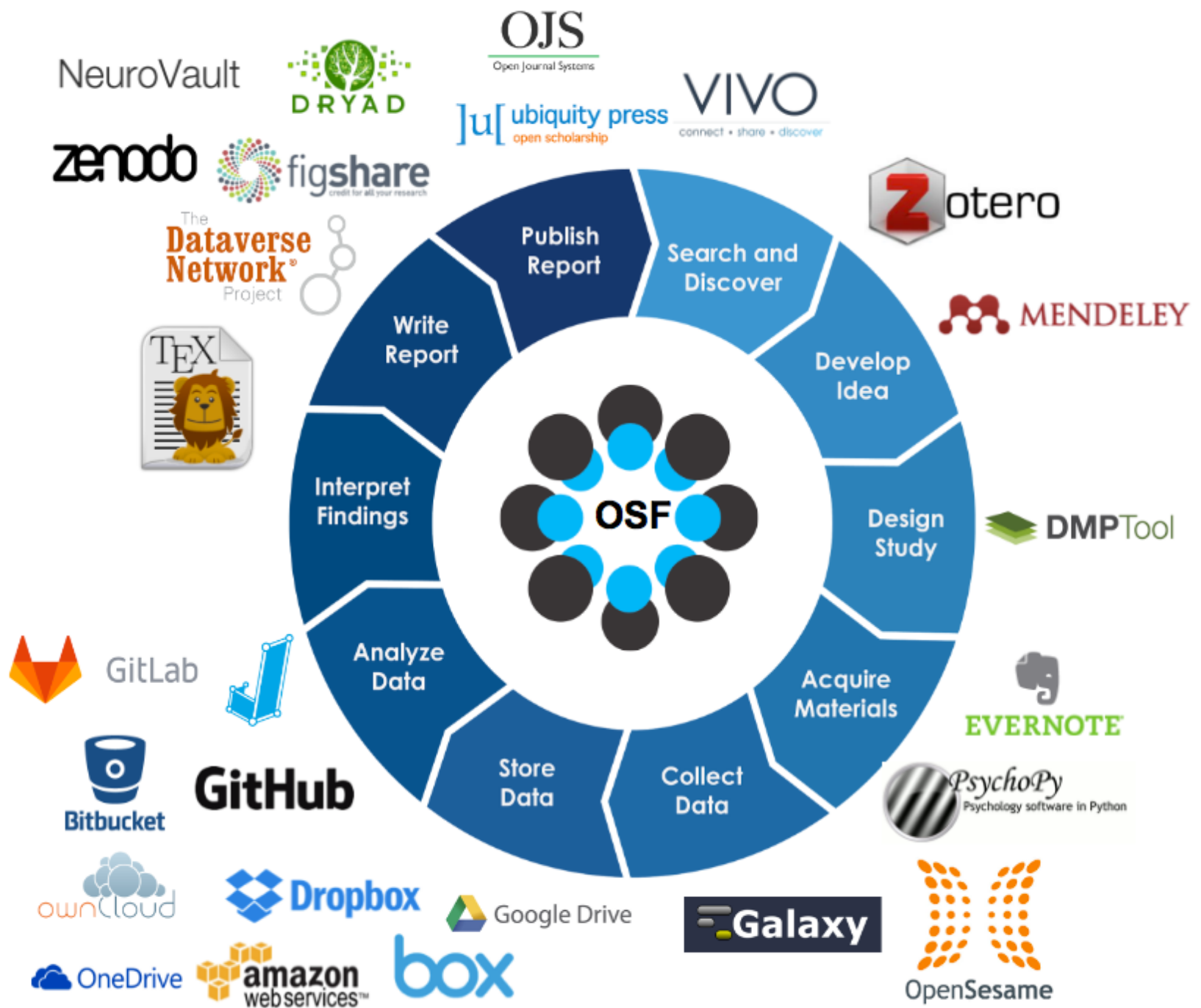
- Options for sharing & publishing research data and meeting funder requirements
- Resources for data repositories in your discipline
- Data formats & metadata that meet repository requirements
- Guidance on copyright & licensing for your research data & publications

(<http://www.library.cmu.edu/datapub/dms/services>)

OPEN SCIENCE FRAMEWORK

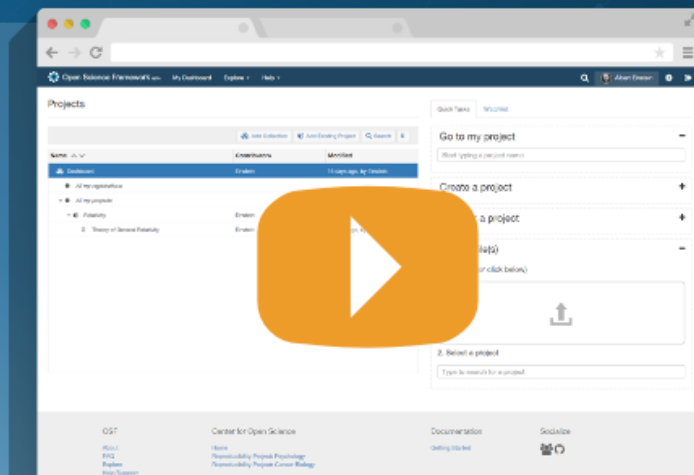


- A powerful tool for projects and collaborations
- Open source
- Carefully structured
- Contents, files and data can be open or closed as needed
- Supports collaboration locally, nationally and internationally
- Has pre-print server capabilities



Open Science Framework

A scholarly commons to connect the entire research cycle



FREE AND OPEN SOURCE. START NOW.

Full name

linke@cmu.edu

Confirm email

.....

☒ I have read and agree to the [Terms of Use](#) and [Privacy Policy](#).

Sign up free

Welcome to the OSF!

Hello Erika Linke,

Thank you for verifying your OSF account, a free, open source service maintained by the Center for Open Science. Here are a few things you can do with the OSF:

Store your files

Archive your materials, data, manuscripts, or anything else associated with your research during the research process or after it is complete.

Share your work

Keep your research materials and data private, make it accessible to specific others with view-only links, or make it publicly accessible. You have full control of what parts of your research are public and what remains private.

Register your research

Create a permanent, time-stamped version of your projects and files. Do this to preregister your design and analysis plan to conduct a confirmatory study, or archive your materials, data, and analysis scripts when publishing a report.

Make your work citable

Every project and file on the OSF has a permanent unique identifier, and every registration can be assigned a DOI. Citations for public projects are generated automatically so that visitors can give you credit for your research.

Measure your impact

You can monitor traffic to your public projects and downloads of your public files.

Connect services that you use

GitHub, Dropbox, Google Drive, Box, Dataverse, figshare, Amazon S3, ownCloud, Bitbucket, GitLab, OneDrive, Mendeley, Zotero. Do you use any of these? Link the services that you use to your OSF projects so that all parts of your project are in one place.

Collaborate

Add your collaborators to have a shared environment for maintaining your research materials and data and never lose files again.

Learn more about the OSF by reading the [Guides](#), or email contact@osf.io with questions for support.

Sincerely,

The Center for Open Science Team

Open Science Framework

- Enhances collaboration amongst researchers in multiple disciplines
- Usable by graduate students, PhD students and researchers
- Framework helpful in any discipline where researchers are seeking platform for collaborative work
- Workshops are an effective means of outreach and training

Research Information Management Systems

- What is a RIM, or Research Information Management System?
- Collects and stores data about faculty research and scholarly work using various resources
- Management and tracking of award and grant opportunities
- Creates expertise profiles
- Provides university wide information about research

Research Information Management Systems (2)

- Can provide compliance data for internal and external purposes
- Technology to connect disparate systems has matured
- Great for sciences, engineering and social sciences; verdict out on other broad disciplines such as the arts or humanities
- Some faculty misgivings to using them
- Open source software or commercial product?

Carnegie Mellon University

- Had disparate databases and resources providing information about research
 - Grants management (but only for awarded grants)
 - Institutional repository established
 - Access to Scopus and SciVal
 - Access to Altmetric
- Products not functionally integrated

DIGITAL science

- Turned to Digital Science for providing state of the art RIM support
- Library plays a key role in providing content and logistical support
 - Symplectic Elements
 - Figshare for Institutions – now KiltHub
 - Altmetric Explorer for Institutions
 - Dimensions – Grants database



- Ultimate aim to be the definitive source for research information
- Utilize external profiles from sources such as ORCID, Researcher ID and SCOPUS to populate publication lists
- Disambiguate names
- Add new publications that are not captured through ORCID, Researcher ID, SCOPUS or Web of Science.



- Figshare for Institutions has replaced our previous BEPress repository
- All data from the previous repository has been imported into KiltHub.
- Figshare to offer a robust and reliable place to curate research data; promote an open culture of sharing; and ensure compliance with open data mandates from funders.
- We are working closely with figshare as it has new capacity to load data sets and other new forms of scholarly output into the repository.



Ability to monitor and report on the attention that CMU's research and clinical trials are garnering from wide-ranging audiences, including practitioners, policy makers and the general public, across sources such as the mainstream media, blogs, social networks, Wikipedia and other community forums.



- Provides administrators and faculty access to the world's leading grants database powered by ÜberResearch.
- Enables automatic links between publications and grants in Symplectic Elements.
- Helps track research trends and identify people and research groups with whom to collaborate around the globe.

Concluding Thoughts

- New initiatives, new opportunities
- Expanded or perhaps new forms of engagement
- New expertise and additional skills may be an required
- Many want change but who wants to change?



Thank you

Questions, comments, thoughts?