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Developing the Scholarly Communication Ecosystem: A CMU Perspective

David Scherer, Ole Villadsen, Keith Webster
@davidascherer @OleVilladsen @cmkeithw

#cni17f #CMUecosystem

Strategic context
Creating a 21st century library at CMU

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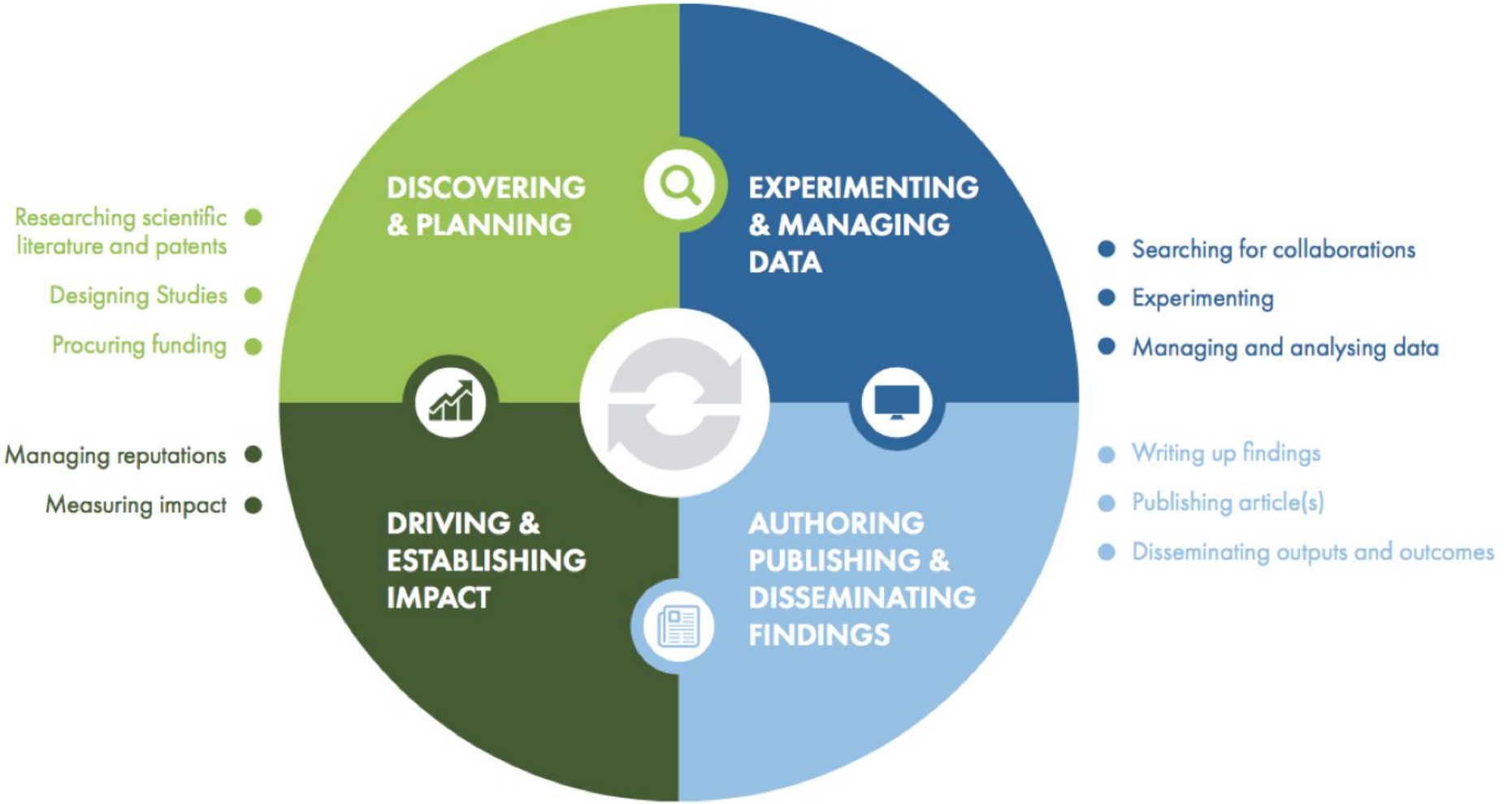
CREATING A 21ST CENTURY LIBRARY

STRATEGIC RECOMMENDATION

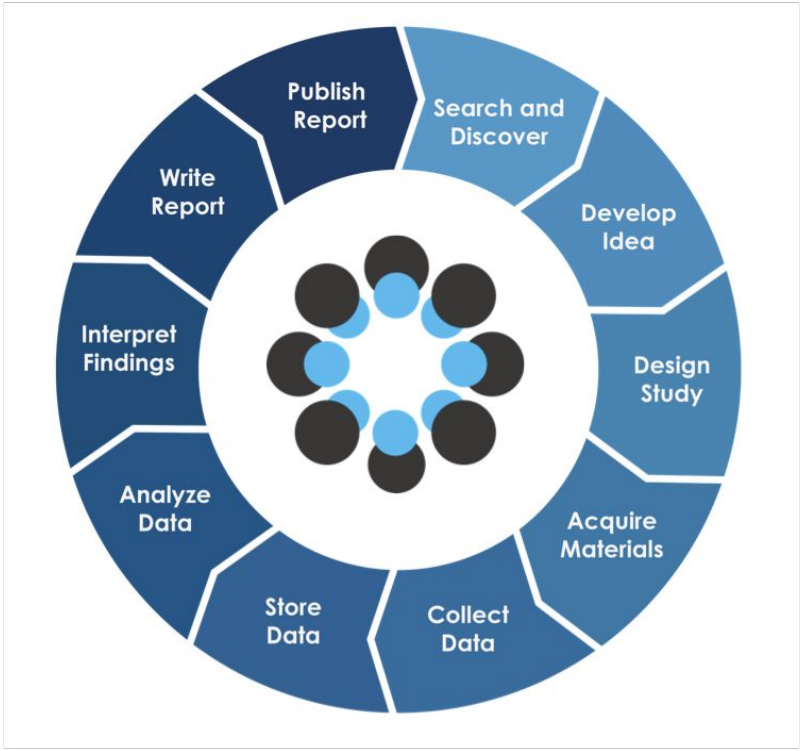
Create a 21st century library that serves as a cornerstone of world-class research and scholarship.

In a world where digital is becoming the default format for information, the library will remain a vital presence on campus, sustaining serious scholarship and providing opportunities for interactive research and study environments. To support this important work for students, faculty, and staff, and to create 21st century library spaces for 21st century learners, the library will:

- Develop information specialists as partners in research, teaching, and learning.
- Collaborate with peer institutions to provide coordinated access to a global collection of information resources.
- Steward the evolving scholarly record, and champion new forms of scholarly communication.
- Be recognized globally as a leader in the development of the scholarly information ecosystem.


DISCOVERING & PLANNING
EXPERIMENTING & MANAGING DATA
DRIVING & ESTABLISHING IMPACT
AUTHORING PUBLISHING & DISSEMINATING FINDINGS
Researching scientific literature and patents
Designing Studies
Procuring funding
Searching for collaborations
Experimenting
Managing and analysing data
Managing reputations
Measuring impact
Writing up findings
Publishing article(s)
Disseminating outputs and outcomes

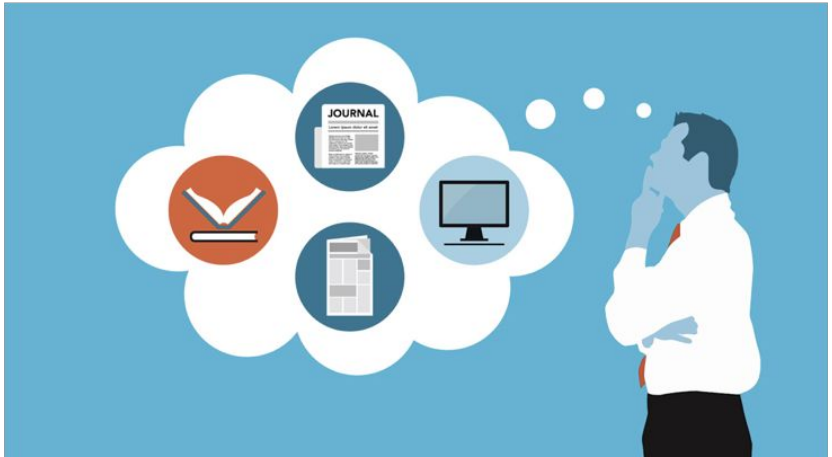
OPEN SCIENCE



The Open Science Framework - cos.io

http://www.oclc.org/research/publications/library/2014/oclcresearch-evolving-scholarly-record-2014-overview.html


Publish Report
Search and Discover
Develop Idea
Design Study
Acquire Materials
Collect Data
Store Data
Analyze Data
Interpret Findings
Write Report


JOURNAL


Method
Evidence
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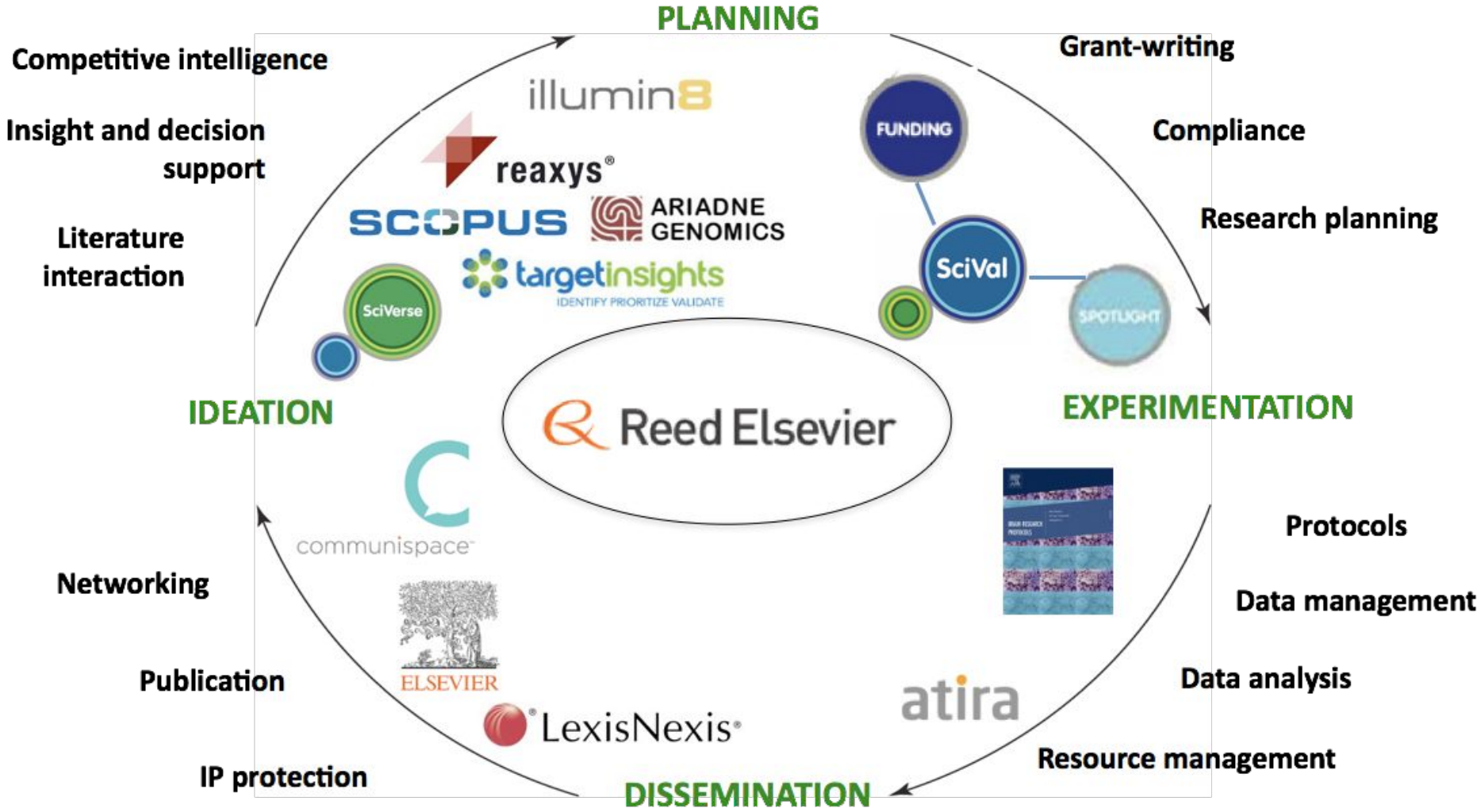
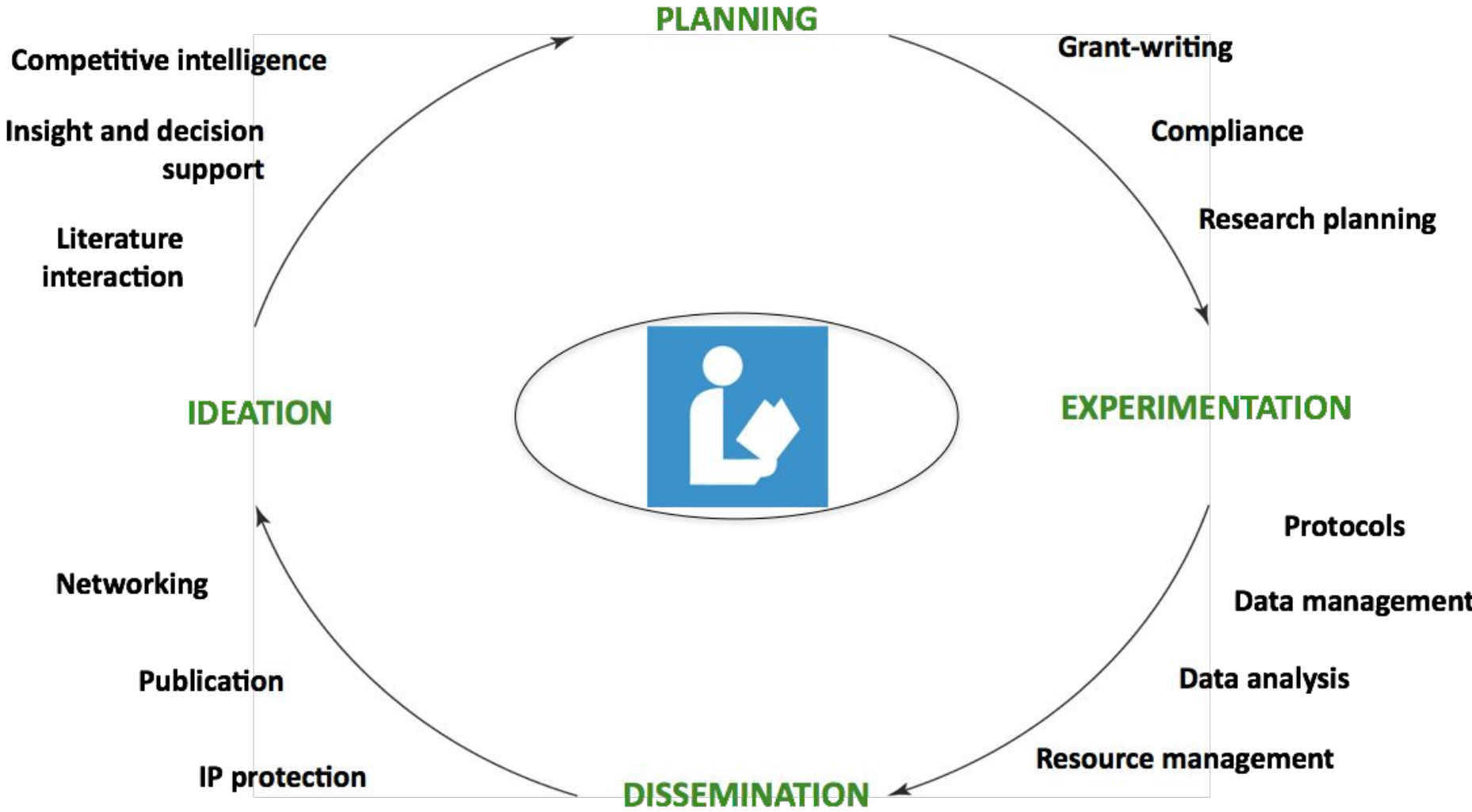
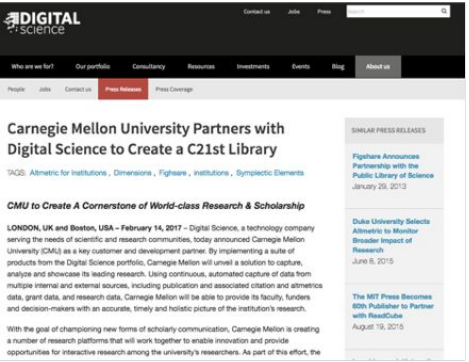
PROCESS
Outcomes
AFTERMATH
Discussion
Revision
Re-use


PLANNING
Competitive intelligence
Insight and decision support
Literature interaction
Grant-writing
Compliance
Research planning
illumin8
reaxys®
SCOPUS
ARIADNE GENOMICS
targetinsights
IDENTIFY PRIORITIZE VALIDATE
SciVerse
FUNDING
SciVal
SPOTLIGHT
IDEATION
EXPERIMENTATION
Reed Elsevier
communispace
Networking
Publication
IP protection
ELSEVIER
LexisNexis®
atira
Protocols
Data management
Data analysis
Resource management
DISSEMINATION

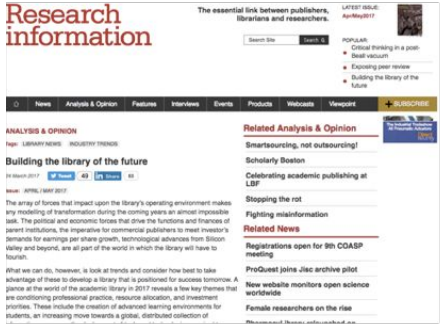

PLANNING
Grant-writing
Compliance
Research planning
EXPERIMENTATION
Protocols
Data management
Data analysis
Resource management
DISSEMINATION
IP protection
Publication
Networking
IDEATION
Literature interaction
Insight and decision support
Competitive intelligence

ANNOUNCING THE PARTNERSHIP



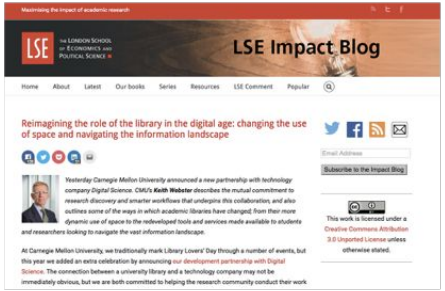
DIGITAL SCIENCE

Strategic partnership announced



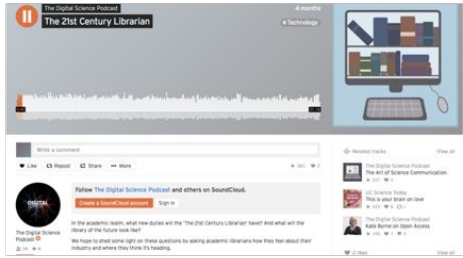
RESEARCH INFORMATION

Building the library of the future



LSE IMPACT BLOG

Reimagining the role of the library



DIGITAL SCIENCE PODCAST

The 21st century librarian

April 10 - 14 : CELEBRATE National Library Week!

Join us for games, treats & buttons to learn how we can help you at every step of the research process.

Discover
MONDAY, 4/10
Hunt Library, 1- 2:30pm

Organize
TUESDAY, 4/11
Sorrells Library, 1- 3:00pm

Create
WEDNESDAY, 4/12
CUC, 11:30 - 1:30 pm

Share
THURSDAY 4/13
Hunt Library, 11 am - 1:00 pm

Impact
FRIDAY 4/14
Scott Hall, 11:30 - 1:30 pm

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Libraries

Summon®

Dimensions

F1000
Faculty of 1000

MENDELEY

Overleaf

readcube

figshare

KUDOS

Elements

Altmetric

SciVal
Experts


I M P A C T

Towards a Comprehensive Institutional Repository

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Coalition for Networked Information

Rethinking Institutional Repository Strategies

Report of a CNI Executive Roundtable Held April 2 & 3, 2017

"A number of participants noted that as they strategized about the direction of their repository should take, they had institutional goals in mind. For example, in an institution that is aiming to expand its research profile, the library wants to understand how it can assist with helping the university account for research, bring together outputs of research, and showcase those results."

https://www.cni.org/wp-content/uploads/2017/05/CNI-rethinking-irs-exec-rndtbl.report.S17.v1.pdf

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Coalition for Networked Information

Rethinking Institutional Repository Strategies

Report of a CNI Executive Roundtable Held April 2 & 3, 2017

"There's a clear path of evolution in architectural thinking, moving from the IR as platform to IR as a service to IR as a bundle of related services."

https://www.cni.org/wp-content/uploads/2017/05/CNI-rethinking-irs-exec-rndtbl.report.S17.v1.pdf

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Coalition for Networked Information

Rethinking Institutional Repository Strategies

Report of a CNI Executive Roundtable Held April 2 & 3, 2017

"Although we are aware that at least one CNI member institution has begun using figshare as its repository platform, none of the participants in the roundtable reported the development at their institution. However, we know that many individual researchers in other institutions are choosing to deposit research outputs in figshare or other platforms rather that [*sic*] locally…"

https://www.cni.org/wp-content/uploads/2017/05/CNI-rethinking-irs-exec-rndtbl.report.S17.v1.pdf

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Historical State of Open Science at CMU

Traditional IR

Archives

Data Repository

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What’s in a Name? Campus Naming Contest

ATTENTION: Carnegie Mellon students, staff and faculty members.

NAME OUR NEW REPOSITORY!

HELLO
MY NAME IS
Your idea here

(An online archive that provides open access to the research data & scholarly works being done at CMU.)

library.cmu.edu/repositorynamingcontest

Winner will receive $500 in research/travel grants or technology. Contest ends 3/24.

Carnegie Mellon University Libraries

51 TOTAL SUBMISSIONS

ENTRIES FROM PGH, SILICON VALLEY, AND QATAR CAMPUSES

10 FACULTY MEMBER SUBMISSIONS

24 STUDENT SUBMISSIONS

17 STAFF MEMBER SUBMISSIONS

20 GRADUATE & PHD STUDENT SUBMISSIONS

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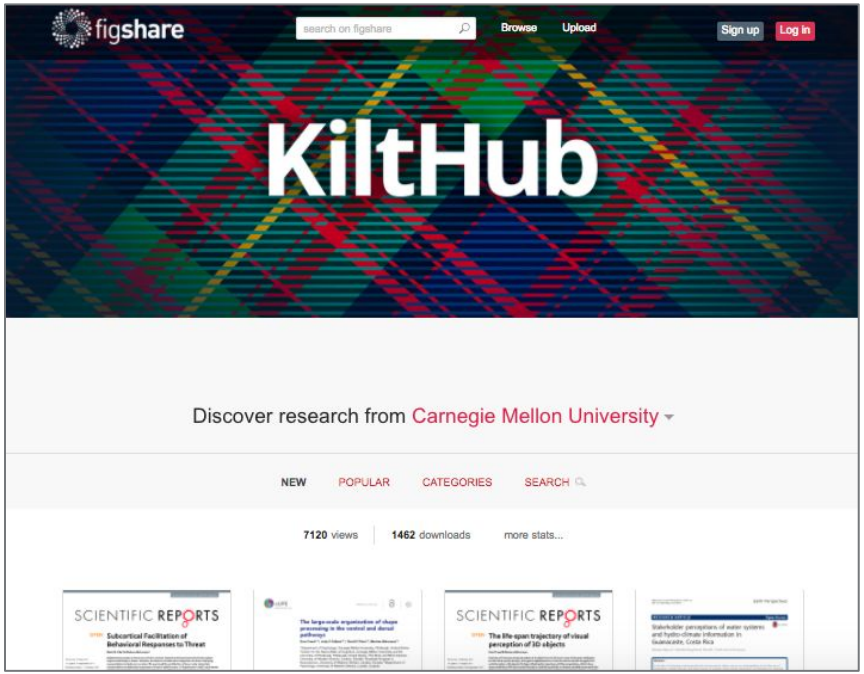
KiltHub Repository



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KiltHub Repository

Provided by the University Libraries, **KiltHub** (**kilthub.cmu.edu**) is the comprehensive institutional repository and research collaboration platform for research data and scholarly outputs produced by members of Carnegie Mellon University and their collaborators. KiltHub collects, preserves, and provides stable, long-term global open access to a wide range of research data and scholarly outputs created by faculty, staff, and student members of Carnegie Mellon University in the course of their research and teaching.

About

+ Why deposit to KiltHub?
+ What Kinds of Materials does KiltHub Accept?
+ What Are The Requirements For Depositing Materials in KiltHub?

Contact Us

KiltHub Repository
kilthub@andrew.cmu.edu
412-268-2443
KiltHub Twitter

Why Deposit to KiltHub?

Make it Open - Share your data and other scholarly outputs, making your research and scholarship more visible to the world.

Simplify Your Research Workflow - It's easy to upload, manage, share, and publish your data and scholarly outputs with a DOI.

Get Credit for Your Work – Track the usage of the DOI, Downloads, and Views of your work.

Comply with Publishers and Funders - Deposit your data, publications, and other grant outputs to show compliance with funder open access requirements.

We Can Help - Liaison Librarians can meet with you to guide you through the repository and deposit process. Contact your Liaison Librarian to setup a consultation.

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KiltHub team

Ole Villadsen
Research Liaison in the fields of Cybersecurity and Information Systems

David Scherer
Scholarly Communications and Research Curation Specialist

Lisa Zilinski
Research Data Consultant

Katie Behrmann
Repository Specialist

Ann Marie Mesco
Data Coordinator

Eric Kaltman
CLIR Fellow for Data Curation in the Sciences

Emma Slayton
CLIR Fellow for Data Visualization and Curation

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What Kind of Materials Does KiltHub Accept?

Research Data (Data Repository)
A dataset is typically a file or collection of files and its corresponding metadata. This metadata may include preservation and presentation information, as well as annotations and ancillary content that is associated with the data. KiltHub is limited in scope to the raw data, or data that supports the claims made in publications/presentations/figures.

Scholarly Outputs (Traditional IR)
When evaluating scholarly outputs for inclusion in KiltHub, *scholarly outputs* should be broadly understood to mean the published or otherwise publicly presented outputs, created by individuals or units within Carnegie Mellon University in the course of their scholarly or professional work that represents the intellectual life and academic endeavor of the university, and may have enduring value.

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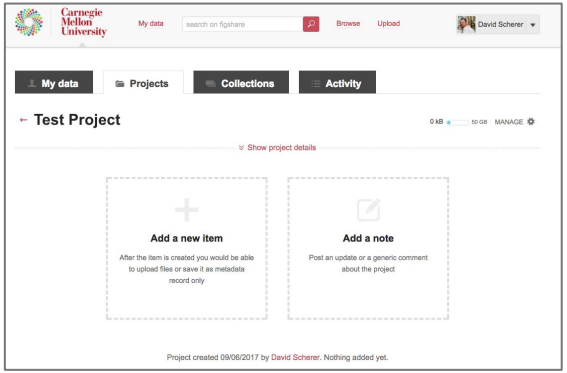
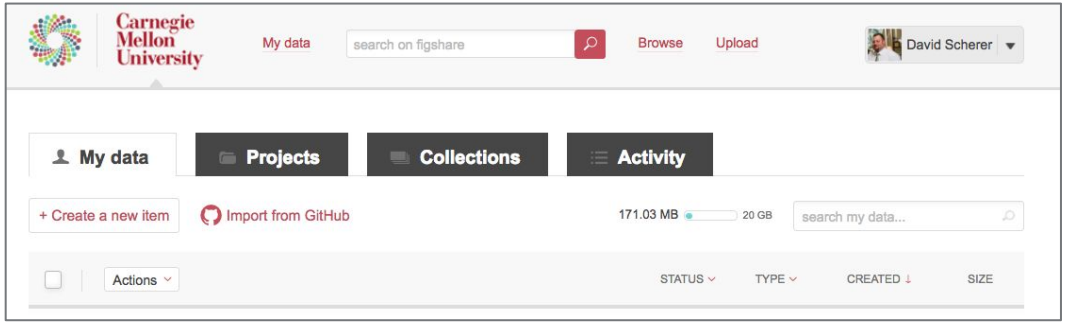
Towards an “Enterprise Repository”

Collaboration Space and Projects



Integrations with Researcher Tools



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Research Information Management (RIM) Systems and Repositories

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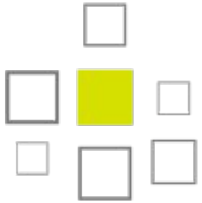
RIMs and IRs



figshare
credit for all your research

Pure

Elements

CONVERIS
Research Information System

DSPACE

DIGITALCOMMONS®
Successful, Sustainable Institutional Repositories

eprints
repository software

DigitalMeasures

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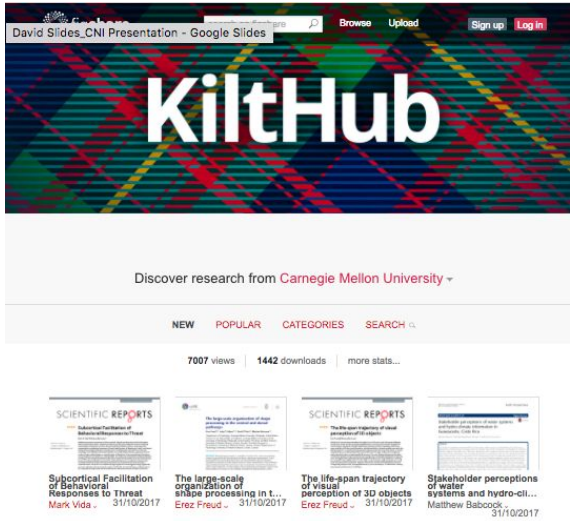
RIMs and IRs



Elements

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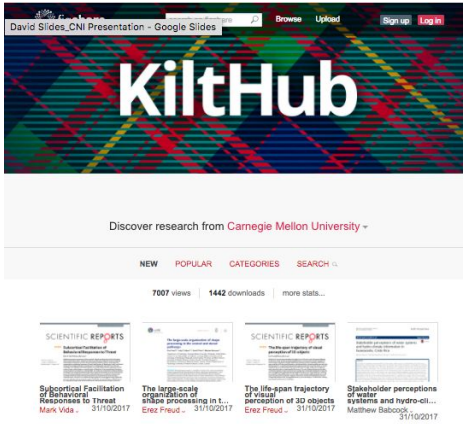
RIMs and IRs



Elements

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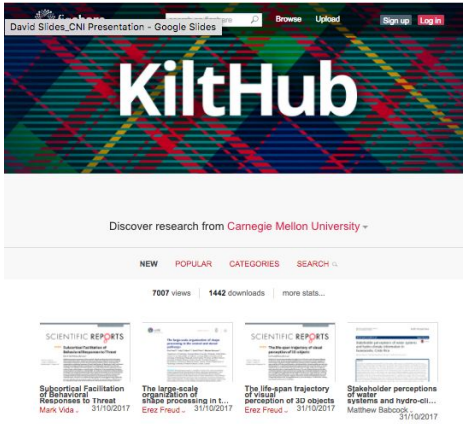
IR to RIM



Metadata Harvesting and Data Match

Elements

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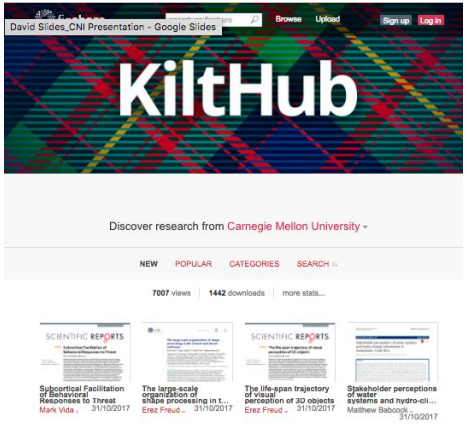
RIMs to IRs



Elements

Deposit

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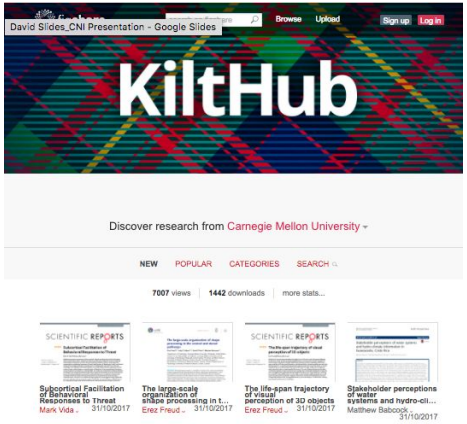
RIMs and IRs



Monitoring OA Status and Engagement

Elements

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Interacting with the Faculty

Challenges and Lessons Learned

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KiltHub Benefits to the Researcher

- **Compliance** - Deposit data, publications, and other grants to show compliance with funder and/or publisher open access requirements

- **Discoverability** - figshare's large footprint on the Web increases discoverability through search engines (e.g. Google)

- **Make it Open** - Share your data and other scholarly outputs, making your research and scholarship more visible to the world.

- **Simplify Research Workflow** - Easy to upload, manage, share, and publish data and scholarly outputs with a DOI.

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Funder and Publisher Compliance

2. **Data Accessibility:** The NOAA Program recommends (or requires) that public access to grant/contract-produced data be enabled as follows *(one or more of the following, or alternate text as appropriate, can be provided as guidance; Data Management Plans submitted with Proposals should reflect the option(s) provided by the Program)*

   - ☐ Funding recipients are expected to submit data to NOAA National Centers for Environmental Information (NCEI), which will provide public access and permanent archiving.
     - ☐ The NOAA Program has held preliminary consultation with NCEI regarding these pending data.
   - ☐ Data are to be submitted to the following International Council for Science (ICSU) World Data System facility: _____.
     (see list at https://www.icsu-wds.org/community/membership/regular-members)
   - ☐ The following NOAA facility *(other than NCEI)* will operate a publicly accessible online data server for these data: _____.
   - ☐ An existing publicly accessible online data server at the funded institution is to be used to host these data (describe in proposal).
   - ☐ Data are to be submitted to a public data repository appropriate to this scientific domain (describe in proposal). *(Options could include Dryad - http://datadryad.org/), Figshare - http://figshare.com/, DataVerse - http://dataverse.org/), Pangaea - http://www.pangaea.de/), Acadis (for Arctic data) - https://www.aoncadis.org/, Merritt (for University of California) - https://merritt.cdlib.org/, or others.)*
   - ☐ Funding recipients will establish their own data hosting capability (describe in proposal).

Recommended Repositories

PLOS requires that authors comply with field-specific standards for preparation and recording of data and select repositories appropriate to their field, for example deposition of microarray data in ArrayExpress or GEO; deposition of gene sequences in GenBank, EMBL or DDBJ; and deposition of ecological data in Dryad. Authors are encouraged to select repositories that meet accepted criteria as trustworthy digital repositories.

PLOS has identified a set of established repositories below, which are recognized and trusted within their respective communities. For further information on environmental and biomedical science repositories and field standards, we suggest utilizing FAIRsharing; we have also created a FAIRsharing page of PLOS recommended data repositories. Additionally, the Registry of Research Data Repositories (Re3Data) is a full scale resource of registered repositories across subject areas. Both FAIRsharing and Re3Data provide information on an array of criteria to help researchers identify the repositories most suitable for their needs (licensing, certificates and standards, policy, etc.).

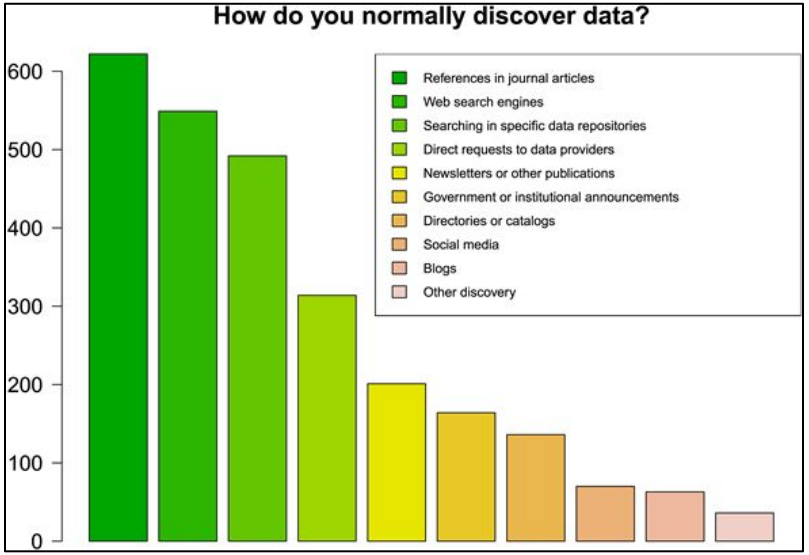
Authors are encouraged to select the repository most appropriate for their research. PLOS does not dictate repository selection for the data access policy. If authors use repositories with stated licensing policies, the policies should not be more restrictive than the Creative Commons Attribution (CC BY) license. More information about the content license can be found in our licenses and copyright policy.

If no specialized community-endorsed open repository exists, institutional repositories that use open licenses permitting free and unrestricted use or public domain, and that adhere to best practices pertaining to responsible data sharing, sustainable digital preservation, proper citation, and openness are also suitable for data deposition.

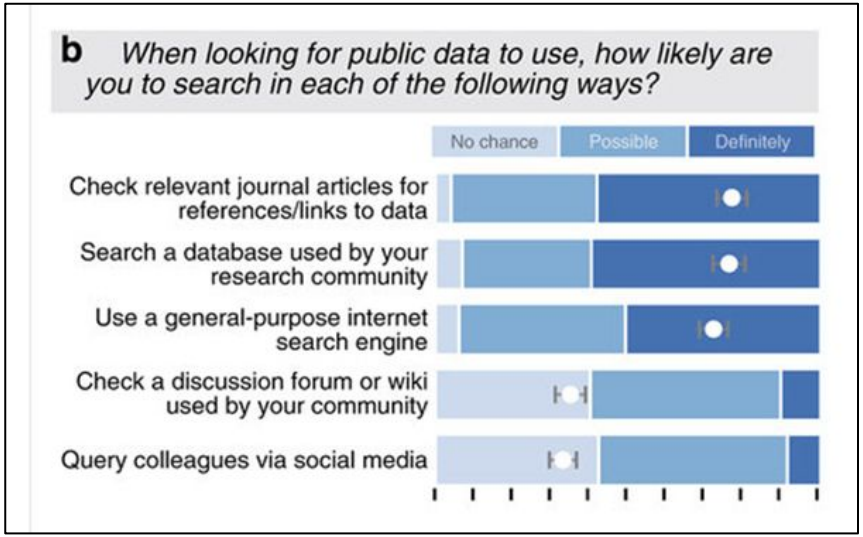
Cross-disciplinary repositories

- Dryad Digital Repository
- figshare
- Harvard Dataverse Network
- Open Science Framework
- Zenodo

How are researchers finding datasets?



Schmidt B, Gemeinholzer B, Treloar A (2016) Open Data in Global Environmental Research: The Belmont Forum's Open Data Survey. PLoS ONE 11(1): e0146695. doi:10.1371/journal.pone.0146695



Kratz, J. E., & Strasser, C. (2015). Making data count. *Scientific Data*, 2, 150039. doi:10.1038/sdata.2015.39

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figshare

search on figshare | Browse | Upload | Sign up | Log in

DATASET — Key.xlsx (46.6 kB)

Qualtrics Survey ... .pdf (494.04 kB)

DATASET — SurveyData.csv (2.03 MB)

introduction-and-... .pdf (2.31 MB)

TEXT — CITE.txt (0.18 kB)

TEXT — README.txt (3.42 kB)

Download all (4.87 MB) | Share | Cite | Embed | + Collect (you need to log in first) | 6 files

Culture and Breaking Change: A Survey of Values and Practices in 18 Open Source Software Ecosystems

09.08.2017, 11:47 by Christopher Bogart, Anna Filippova, James Herbsleb, Christian Kastner

Software ecosystems have become one of the most important ways to organize software development, and to maintain and reuse code packages. But coordination can be a major challenge in software ecosystems when packages change, since packages tend to be highly interdependent yet independently maintained. The culture of an ecosystem includes those values and practices associated with managing change. We conducted a survey of thousands of developers in more than a dozen ecosystems, asking them about the values and practices that make up their communities' distinctive cultures; as well as the perceived power of different stakeholders and perceived health of the community. This dataset release shares anonymized data from the survey.

248 views | 28 downloads | 0 citations

CATEGORIES

- Software Engineering

KEYWORD(S)

software ecosystems | collaboration | breaking changes | qualitative research

LICENCE

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EXPORT

Google

software ecosystems culture change

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Change Management Strategies - Emerson Human Capital
Ad change.emersonhc.com/change/management
We Help Drive Smooth, Efficient Implementation of **Change** in Your Organization.
National Availability · Change Expertise · Human Behavior Experts · Improve Work Processes

Scholarly articles for **software ecosystems culture change**
Agile **software** development, the people factor - Cockburn - Cited by 988
Agile **software** development **ecosystems** - Highsmith - Cited by 1202
People factors in **software** management: lessons from ... - Boehm - Cited by 67

Culture and Breaking Change: A Survey of Values and Practices in 18 ...
https://figshare.com/.../Culture...Change...Software_Ecosystems/5108716
Aug 9, 2017 - **Software ecosystems** have become one of the most important ways to organize software development, and to maintain and reuse code packages. But coordination can be a major challenge in **software ecosystems** when packages **change**, since packages tend to be highly interdependent yet independently ...

Two Critical Components Of Your Innovation Ecosystem - Forbes
https://www.forbes.com/.../two-critical-components-of-your-innovation-ecosystem/
Aug 14, 2013 - Finally, this framework will ensure that **culture** – the most critical piece of innovation – is on everyone's agenda. Again, it's easy to get distracted from doing hard work, through the allure of the less complex. Driving innovation is a matter of staying focused on **culture changes** (**software**). Yes, you upgrade ...

Is culture-change the same as software-change? – Tom Graves ...
weblog.tetradian.com › Business
Sep 24, 2015 - Because a lot of the answer to that depends as much on how we understand **software-change** as on how we understand **culture**. ... **Cultures** are **ecosystems**: and the outcomes of an **ecosystem** are always an emergent effect arising not just from the sum of the elements themselves, but from the interactions ...

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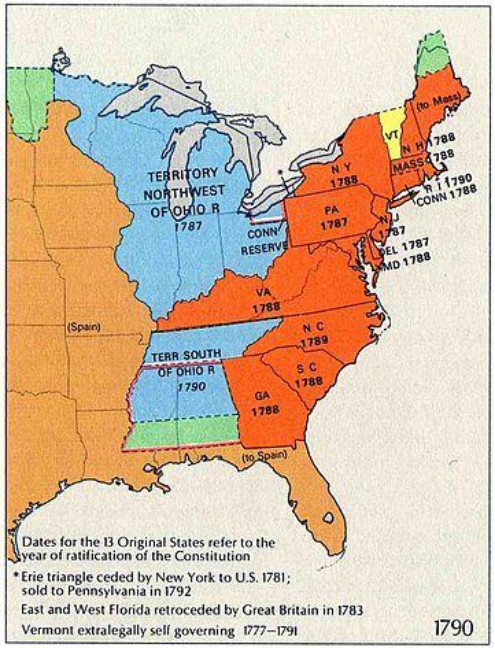
RIM Implementation Challenges

Curating profiles

CC0, https://pixabay.com/en/library-la-trobe-study-students-1400313/

Decentralized campus



Public Domain, https://commons.wikimedia.org/w/index.php?curid=2720778

Technology Integration

CC BY-ND 2.0, https://www.flickr.com/photos/epublicist/3546059144

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Lessons Learned

- More limited discovery on Google Scholar than expected (under investigation)
- Formalizing data submission and deposit requirements & boilerplate descriptions of figshare for DMPs
- Balancing “carrots and sticks” when marketing RIM and Repository
    - Position the Libraries as “H&R Block, not the IRS”: We really are here to help

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Next Steps and Future Expansions of the Ecosystem

Next Steps

Continued Rollout and Engagement of KiltHub

Deployment of Elements and Use Cases:

- Faculty Profiles/Documents
- Annual Reporting
- Support for Promotion Review and Tenure

Future Expansions of the Ecosystem

Completing the Research Lifecycle Support Loop

- E.g. Electronic Lab Notebooks, Protocol Repository, Collaborative Writing Tools, etc.

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Thank you
Questions / Comments

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@CMKeithW

Pages
KiltHub:
https://kilthub.cmu.edu

About Page: http://library.cmu.edu/kilthub/about

Guides
http://library.cmu.edu/kilthub/deposit
Deposit Guide
Projects Guide
Collections
Data Deposit Guide

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