June 07, 2019

Collaborative Approaches to Integrate Repositories within the Research Information Ecosystem

Creating Bridges for Common Goals

David Scherer, *Carnegie Mellon University*
Kate Byrne, *Symplectic*
Mark Hahnel, *Figshare*
Dan Valen, *Figshare*

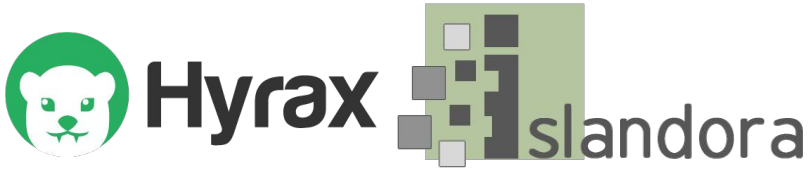
Carnegie Mellon University

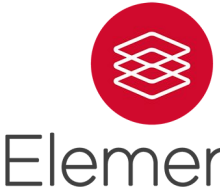
@davidascherer @katebyrne @dnvln @MarkHahnel #nasig19

Repositories and Research Information Management Systems

Repositories

RIMS





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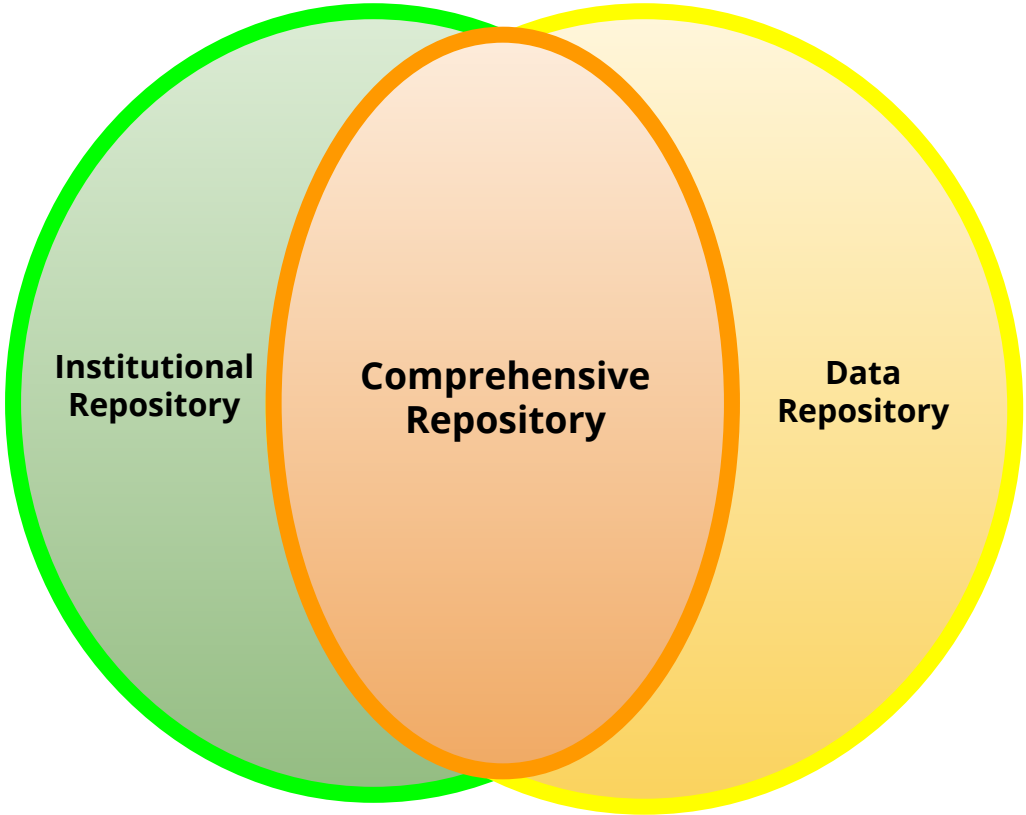

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WEAVING THE FABRIC OF YOUR RESEARCH
@KILTHUB | KILTHUB.CMU.EDU

Research Information Management Systems

Current Research Information Systems

Faculty Information Systems

Scholarly Information Systems

Faculty Activity Reporting Systems

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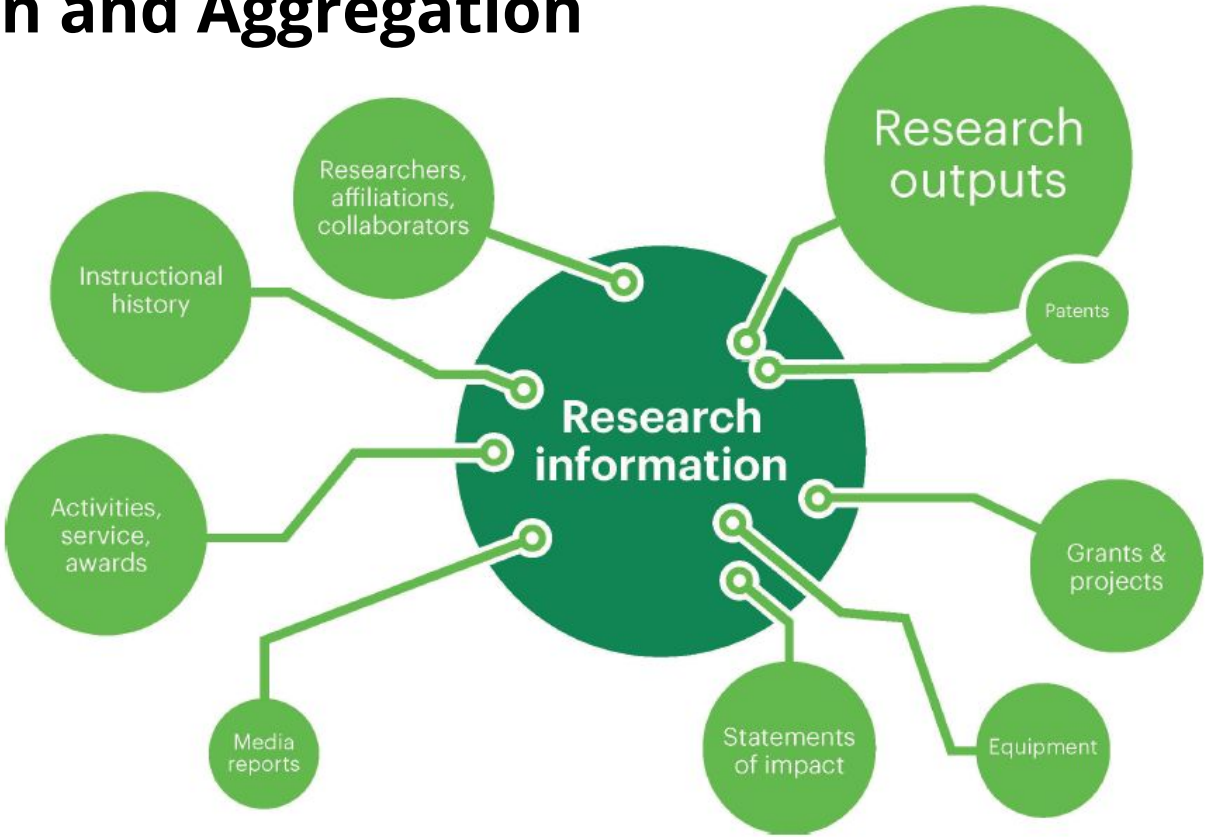
Curation and Aggregation



"RIM Metadata" by OCLC Research, from *Research Information Management: Defining RIM and the Library's Role* (doi.org/10.25333/C3NK88), CC BY 4.0

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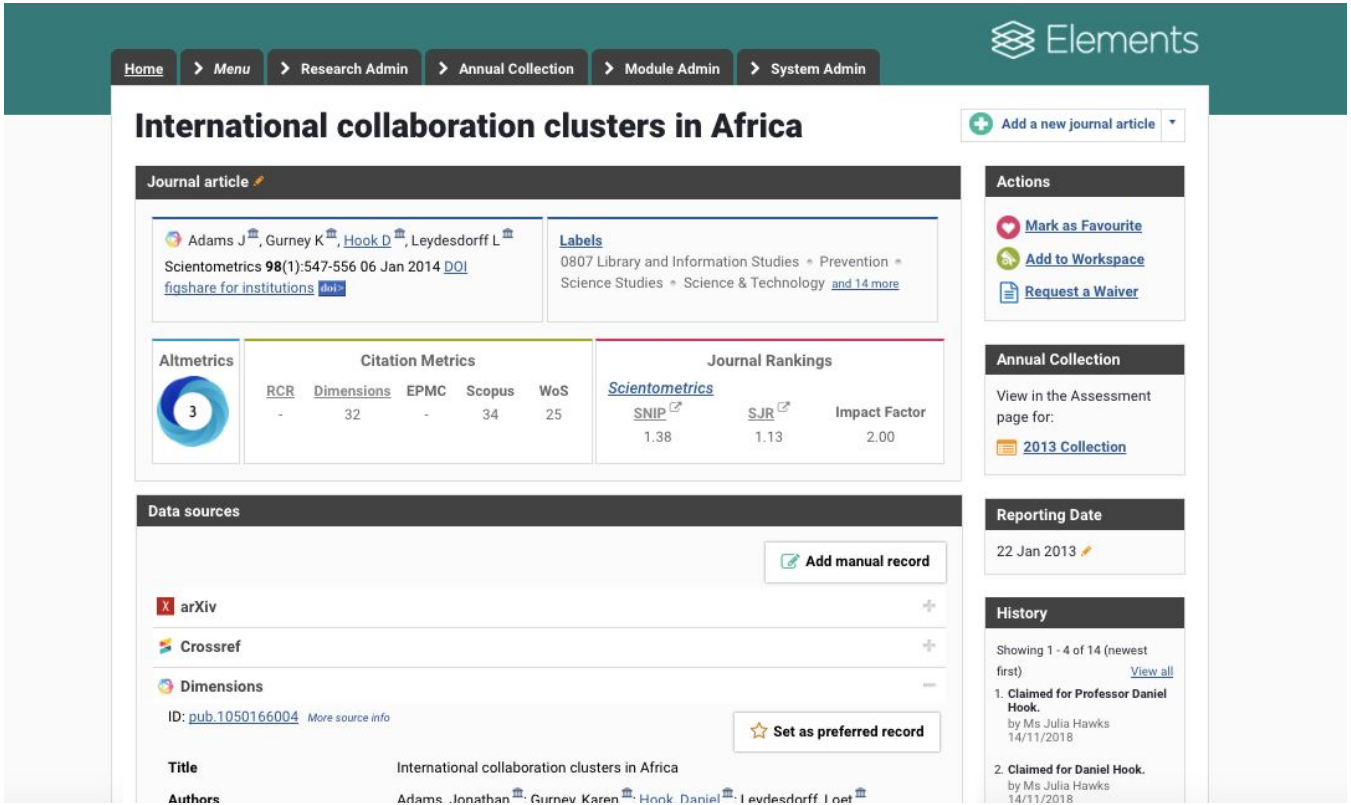

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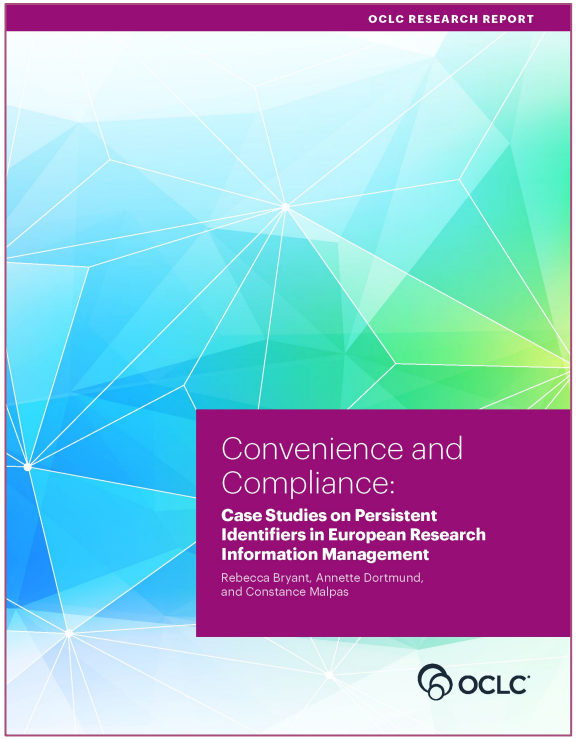
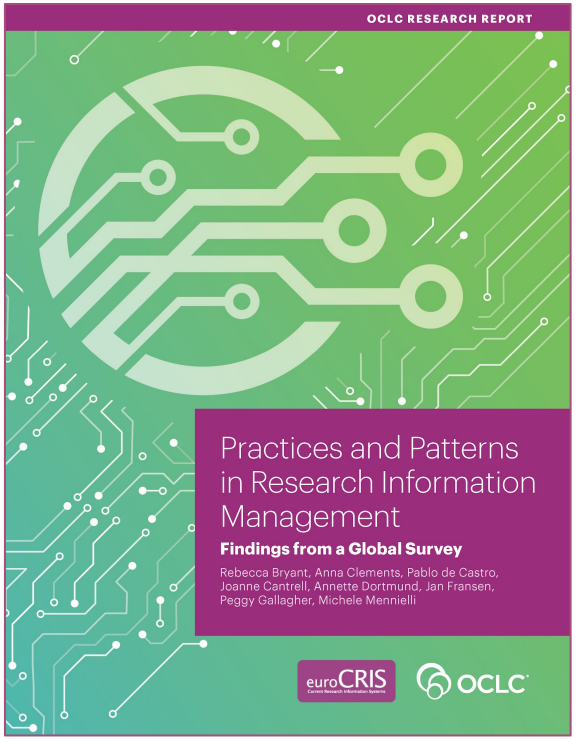
An Increasing Role for Libraries





"Libraries in Research Information Management" by OCLC Research, from *Research Information Management: Defining RIM and the Library's Role* (doi.org/10.25333/C3NK88), CC BY 4.0)

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What is the Scholarly Communication Ecosystem?

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Universiteit Utrecht

Kramer, B., Bosman, J. (2015) *101 Innovations in Scholarly Communication - the Changing Research Workflow.* https://doi.org/10.6084/m9.figshare.1286826.v1

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Research Lifecycle/Workflow

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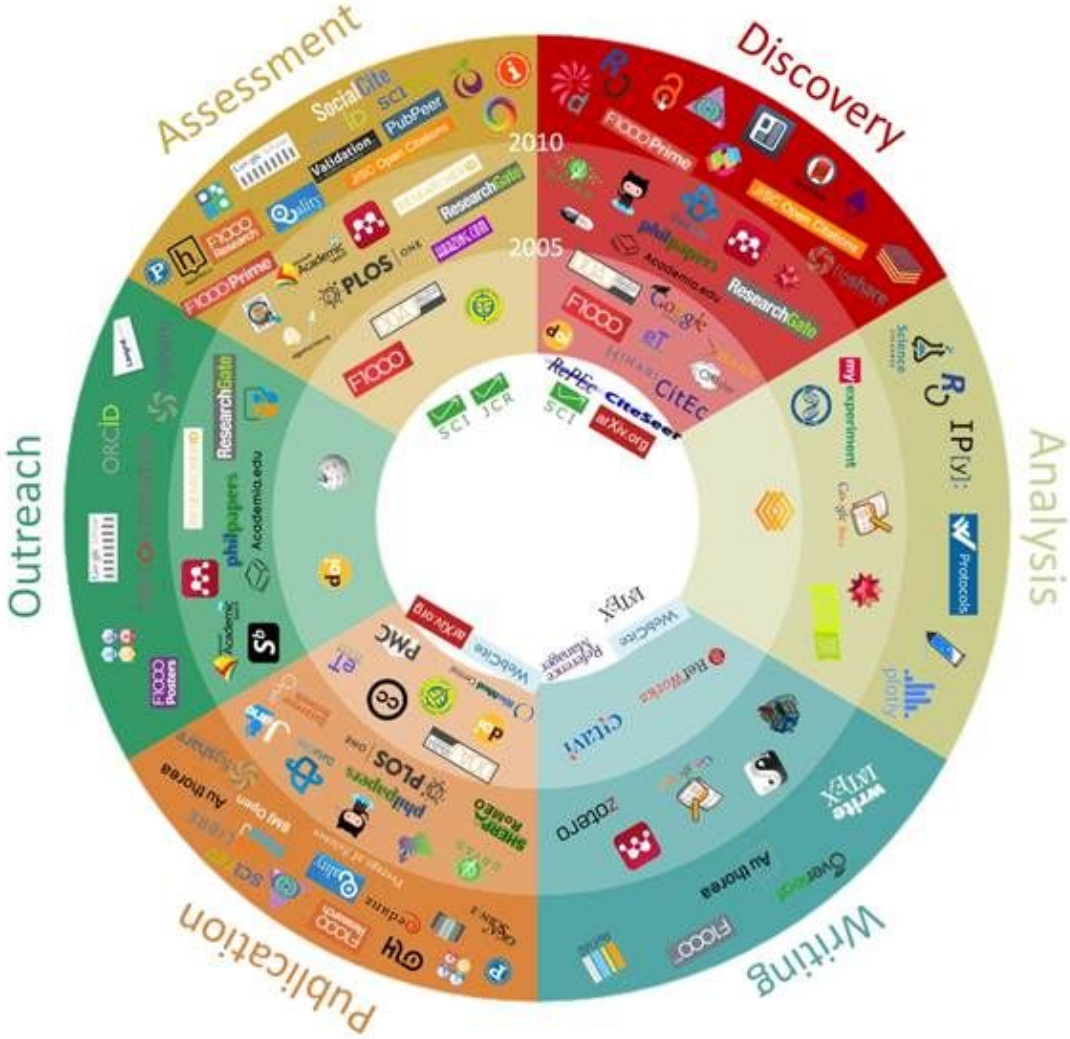
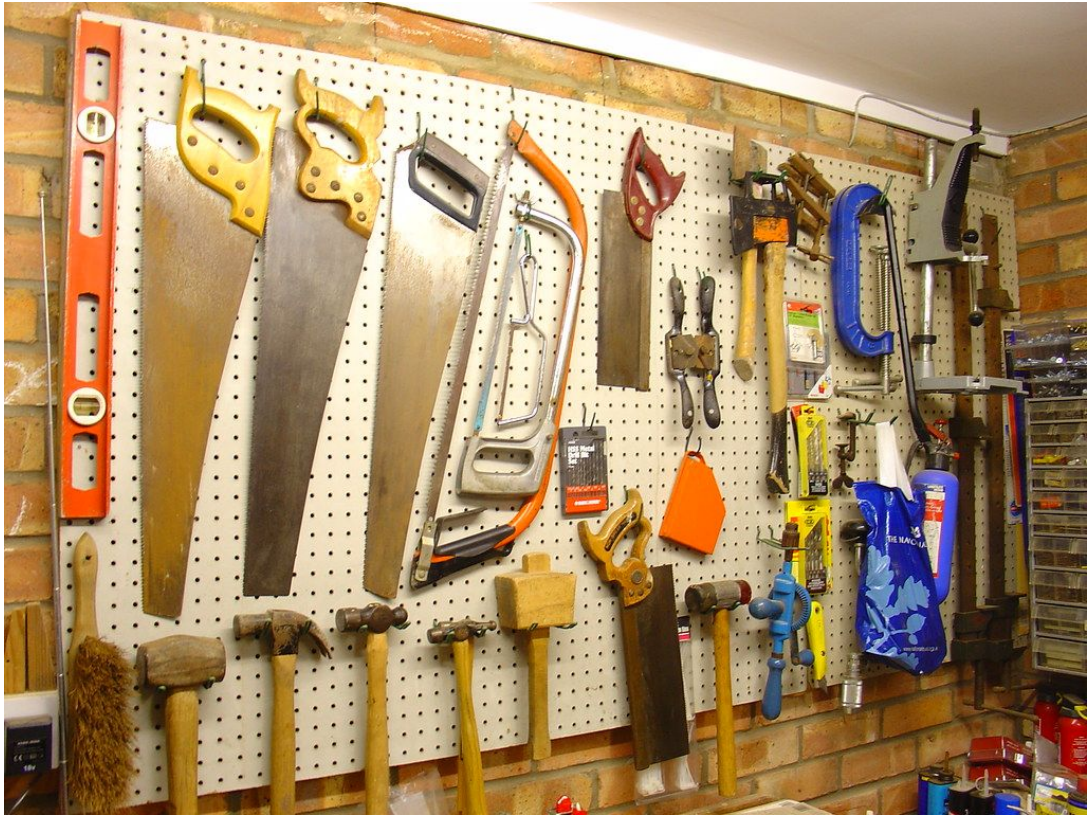

Discovery
Analysis
Writing
Publication
Outreach
Assessment
2010
2005

Scholarly Communication Tools

- 2015 - 101 Tools
- 2015 - 400+ Tools
- 2019 - 680+ Tools!

Current List:
https://docs.google.com/spreadsheets/d/1KUMSeq_Pzp4KveZ7pb5rddcssk1XBTiLHniD0d3nDqo/edit#gid=0



Tools by Andrew Fogg CC-BY 2.0

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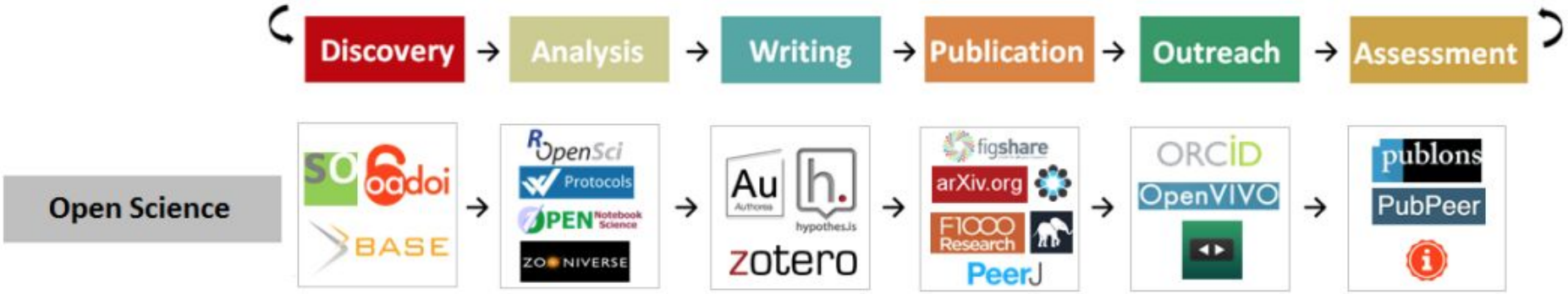

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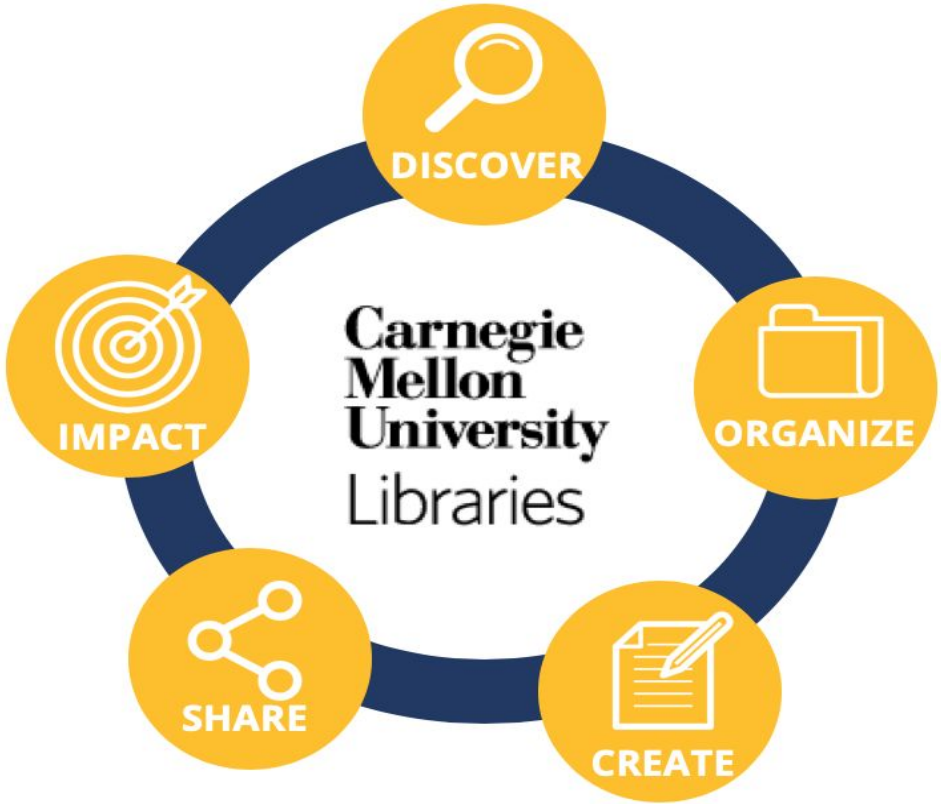
THE SCE at CMU



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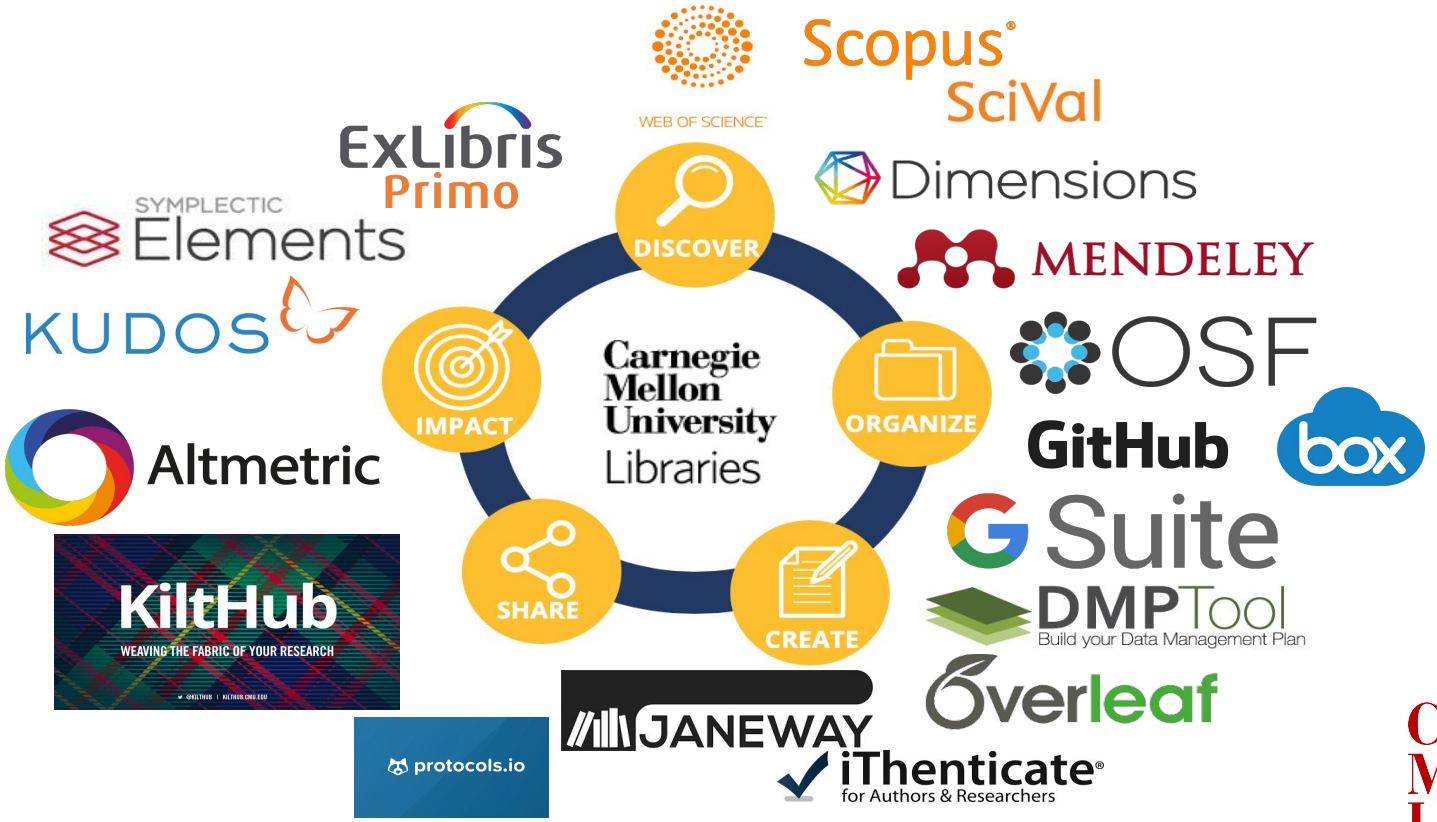
THE SCE at CMU



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Repositories and the SCE

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DSPACE

figshare

eprints
repository software

zenodo

bepress™

DRYAD

Fedora™

PANGAEA.

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Helping make research open…

Make research ‘FAIR’

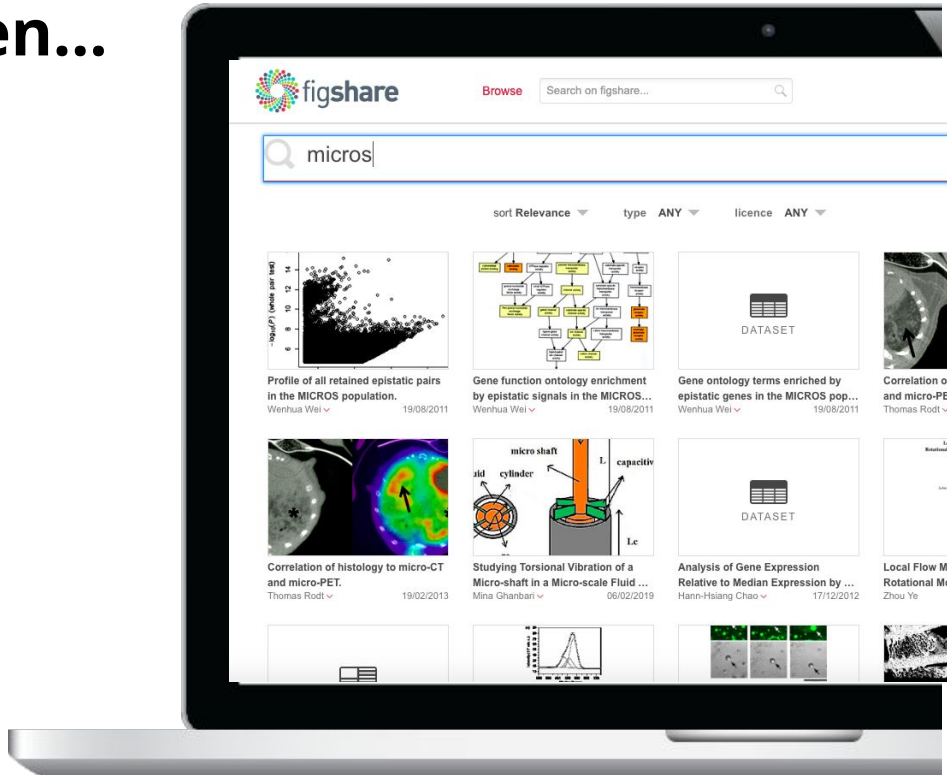
Publish research in any file format

Review before publishing

Interoperate with other systems

Support OA policies & initiatives

Assign branded DOIs or handles



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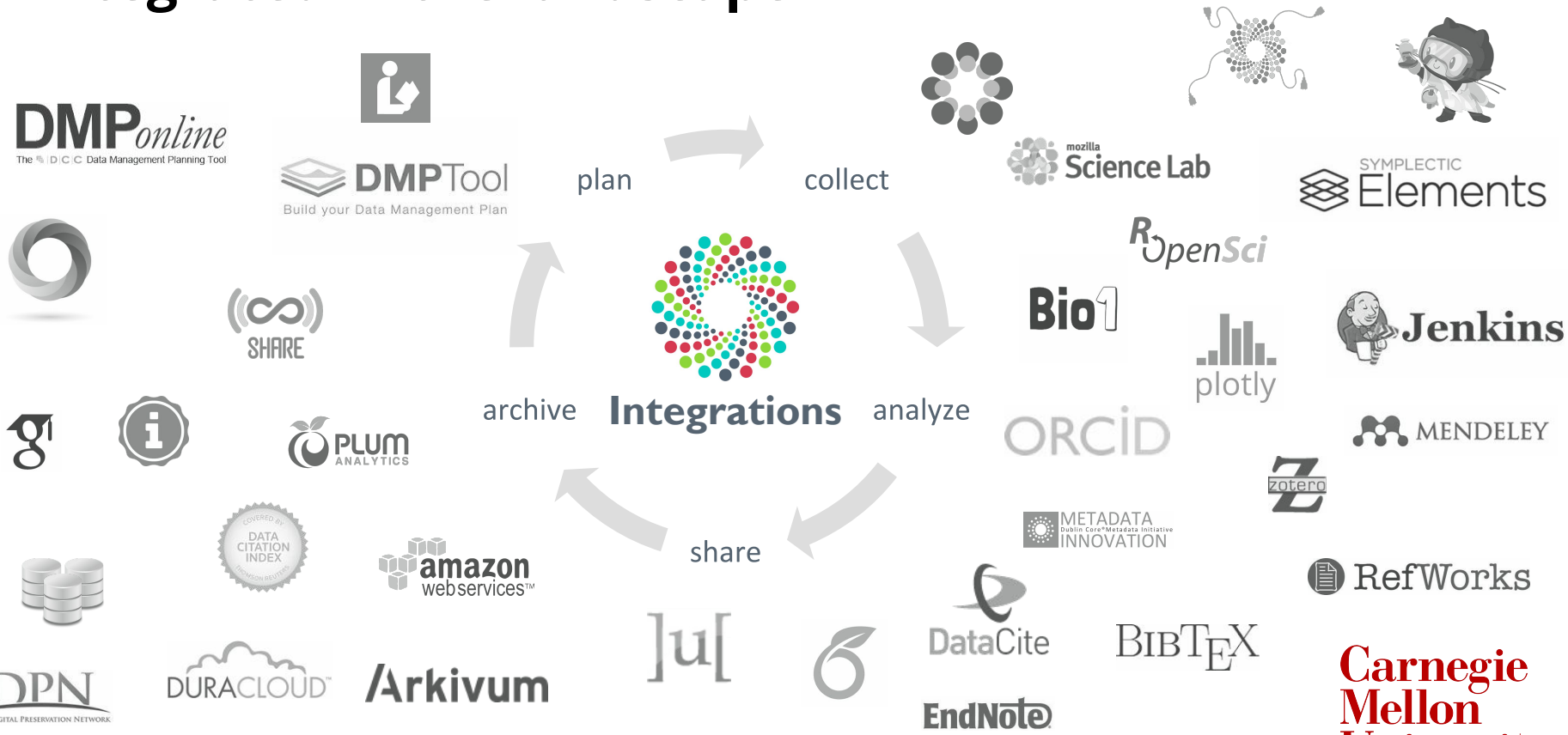
Integrated in the landscape



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Support for open standards and de facto standards

Type	Indexed in
Datasets	Google Dataset Search Datacite DataONE Dimensions OpenAire SHARE Clarivate Data Citation Index PubMed National metadata registries eg. Research Data Australia
Papers	Google Scholar
Preprints	Google Scholar Dimensions
Theses	Google Scholar Networked Digital Library of Theses and Dissertations

Metadata formats

Currently, the supported formats are: **Dublin Core** (*oai_dc*), **Datacite** (*oai_datacite*), **RDF** (*rdf*), **CERIF XML** (*cerif*), and **Qualified Dublin Core** (*qdc*) (hasPart support).

Google Dataset Search ALPHA

Search for datasets

Secure https://figshare.com/rss/portal_group/plos/plosbiology

Apps ALL figshare Client... figshare.com Google+ https://docs.google... figshare: LinkedIn Tumblr Implementa

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      <link>https://figshare.com/collections/Towards_an_integrated_view_of_vocal_development/4039298</link>
      <description>Vocal development is usually studied from the perspective of neuroscience. In this issue, Z
growth might condition the process. They study the vocalizations of marmoset infants with a wide range of tech
experiments that mimic growth reversal. Their results suggest that the qualitative changes that occur during d
between the nervous system and the biomechanics involved in respiration. This work illustrates how an integrat
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region, qualitatively different solutions (different behaviors) are expected. One of the parameters is related
varied, different solutions can be found at early stages of development (light grey arrow), and only one solut
Placing marmoset infants in a heliox atmosphere, Zhang and Ghazanfar mimic the reversal of a parameter that co
behaviors (green arrow).</description>
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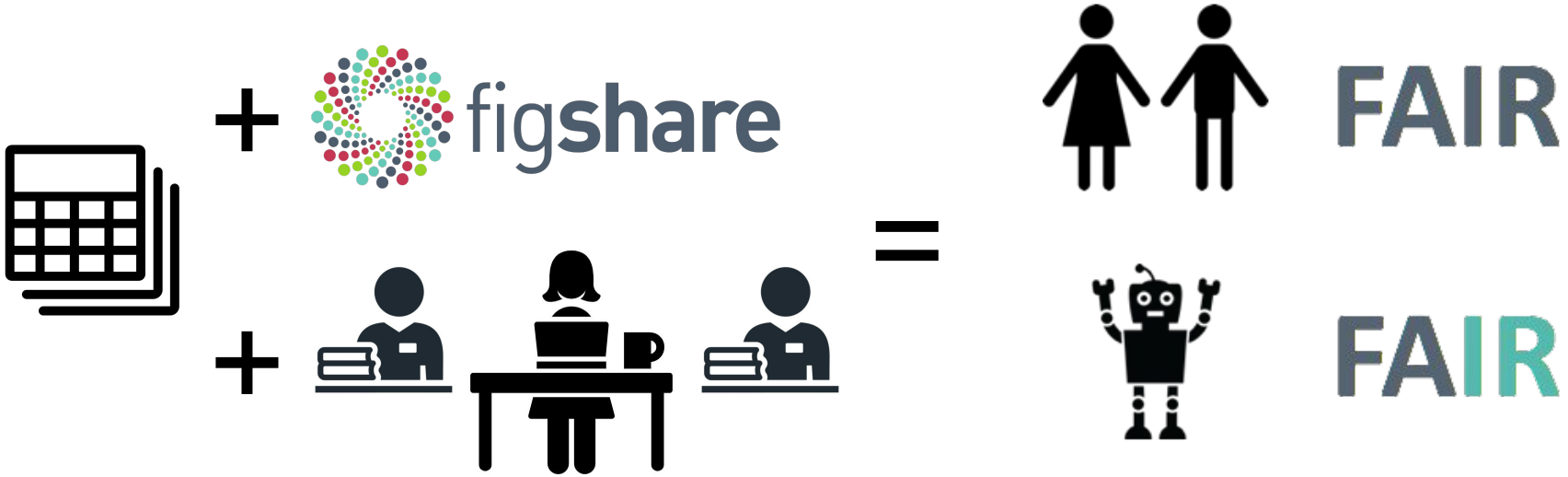
Findable, Accessible, Interoperable, Reusable



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RIMS and the SCE

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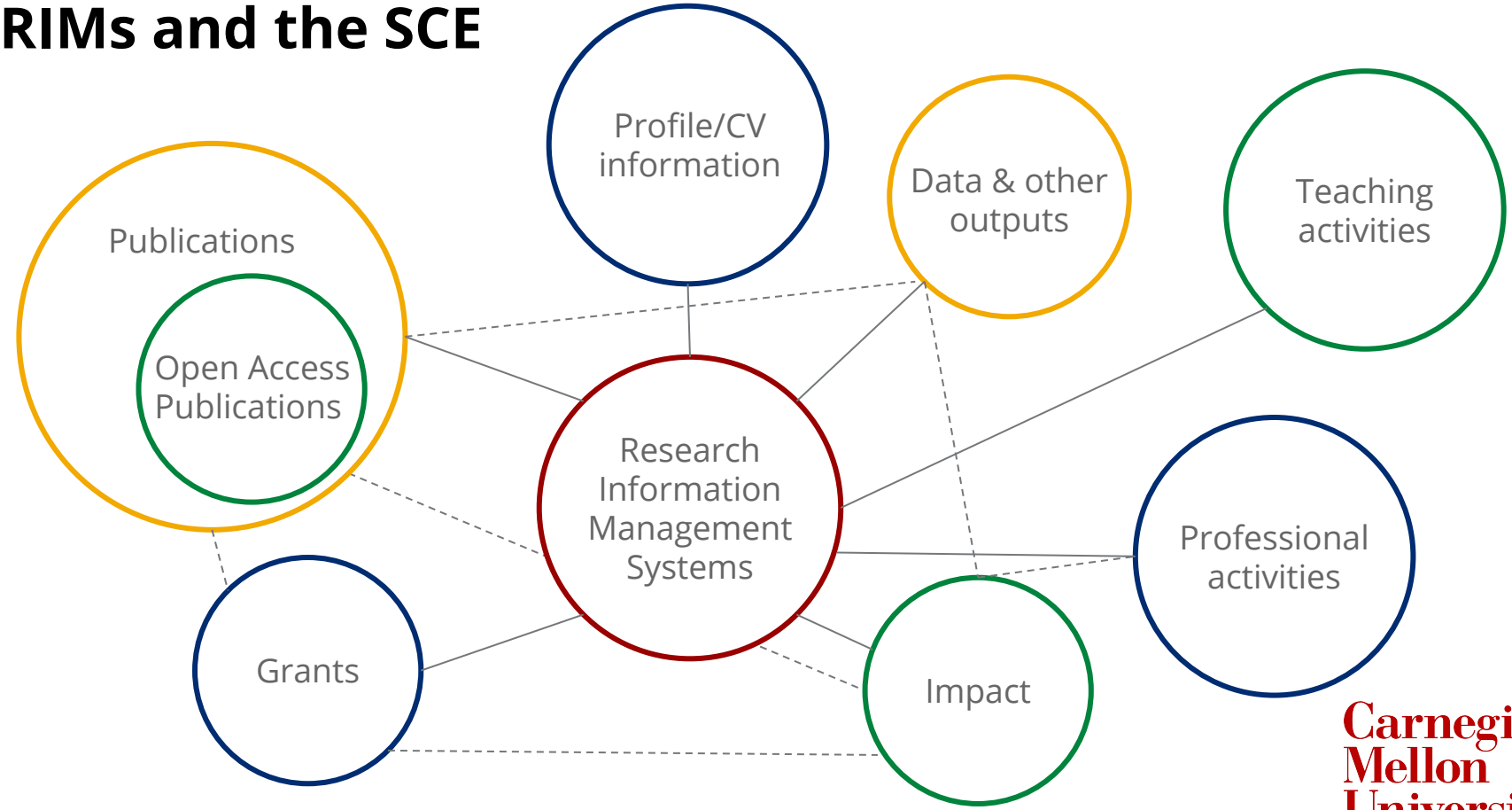
RIMs and the SCE



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Beyond collecting data…

Curate & enrich metadata

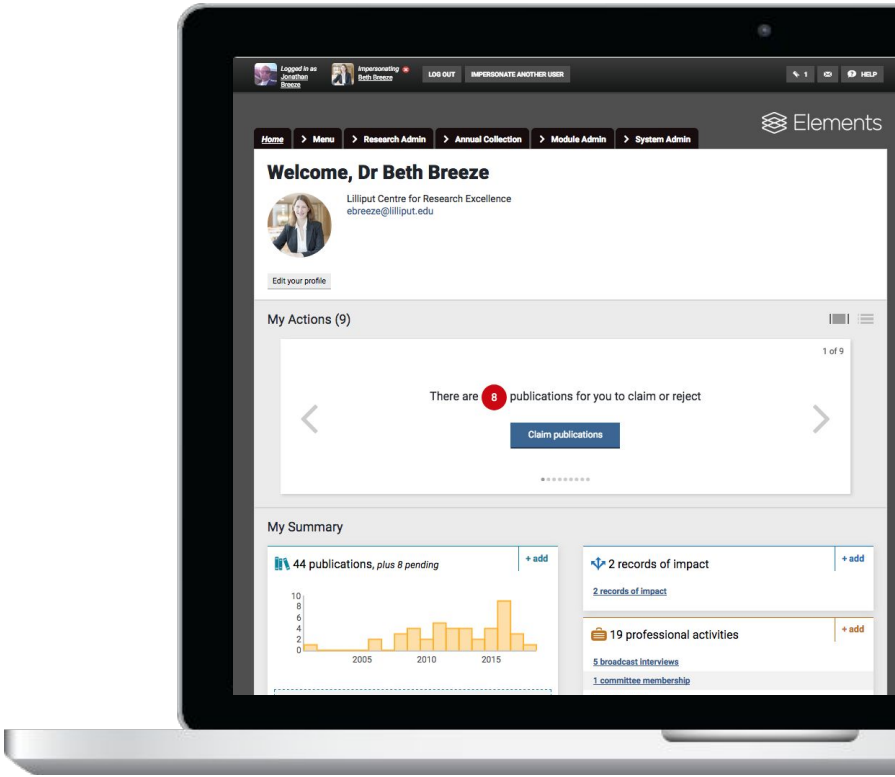
Internal Reporting & Analysis

Populate Public Profiles

Capture Research Impact

Support Open Access

Annual Reviews & Assessment
(e.g. REF 2021)



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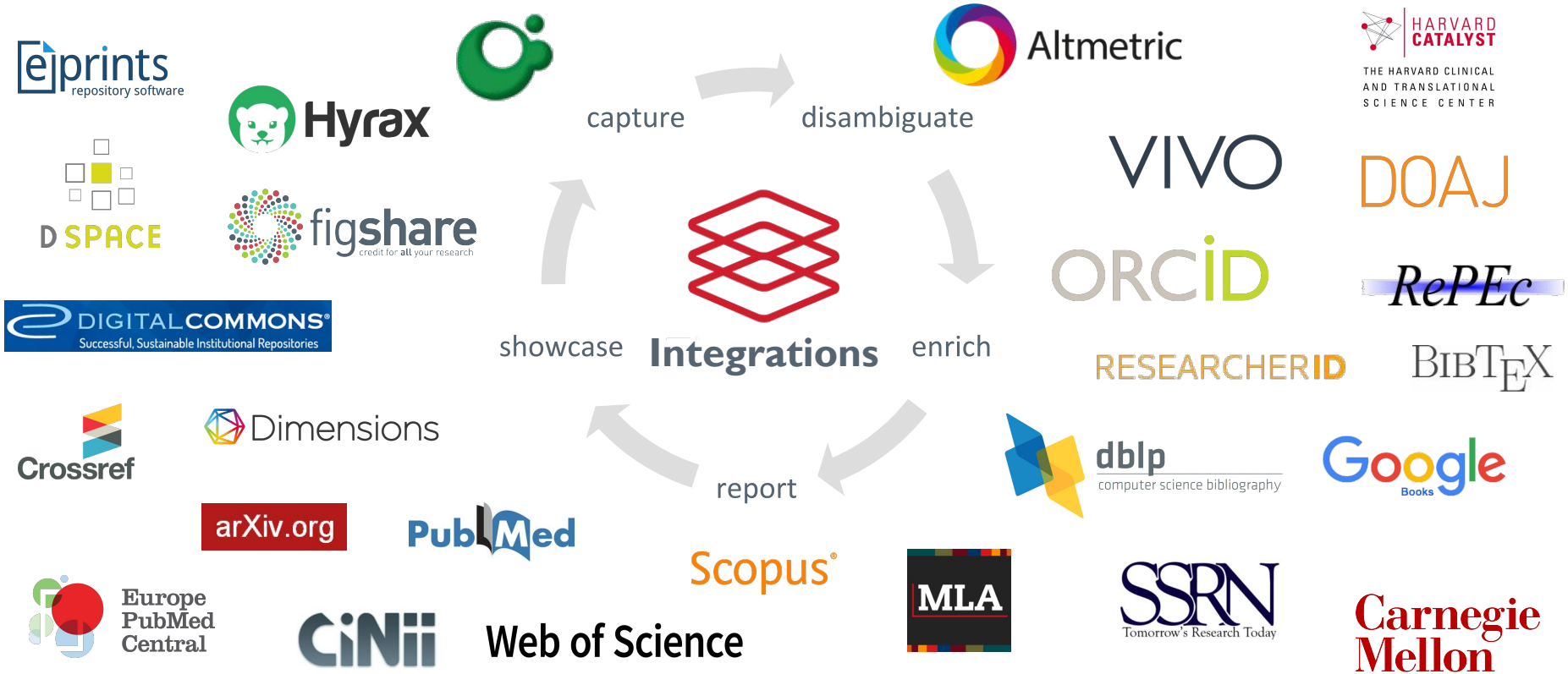
Integrated in the landscape



Views of the Network

"RIM Uses" by OCLC Research, from *Research Information Management: Defining RIM and the Library's Role* (doi.org/10.25333/C3NK88), CC BY 4.0)

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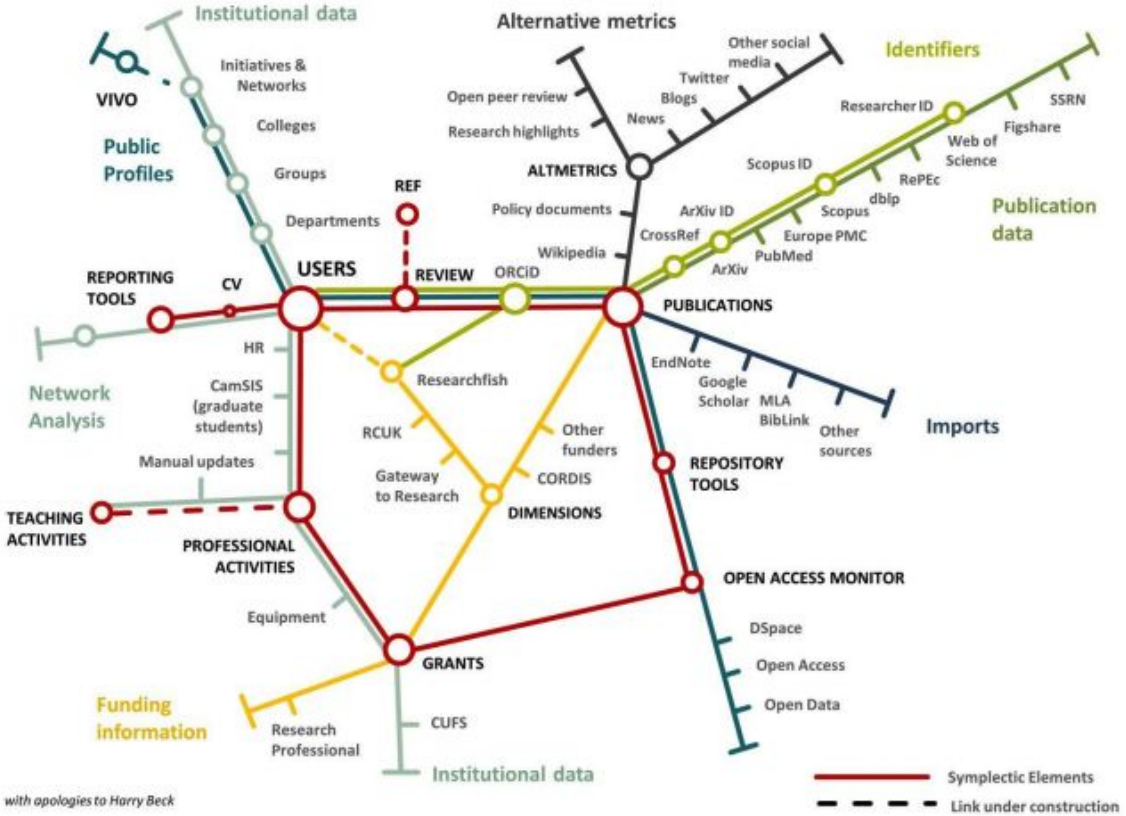
Views of the network: Cambridge University



Juergen Wastl (2017). Academic Profile, Network and Collaboration Analysis : Use Cases for the University https://doi.org/10.17863/CAM.13805

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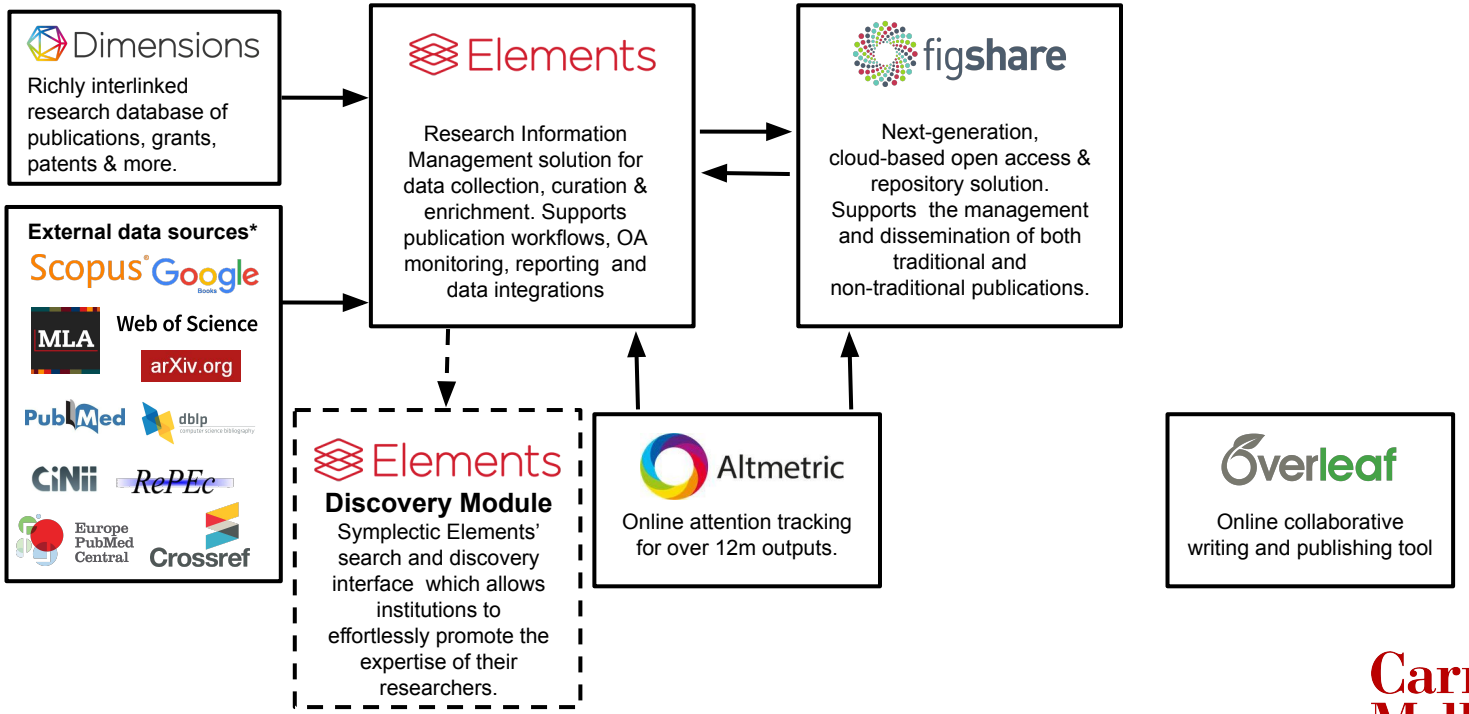
Views of the network: Carnegie Mellon University



*Data sources used by Elements. Data sources actually integrated with Primo may differ.

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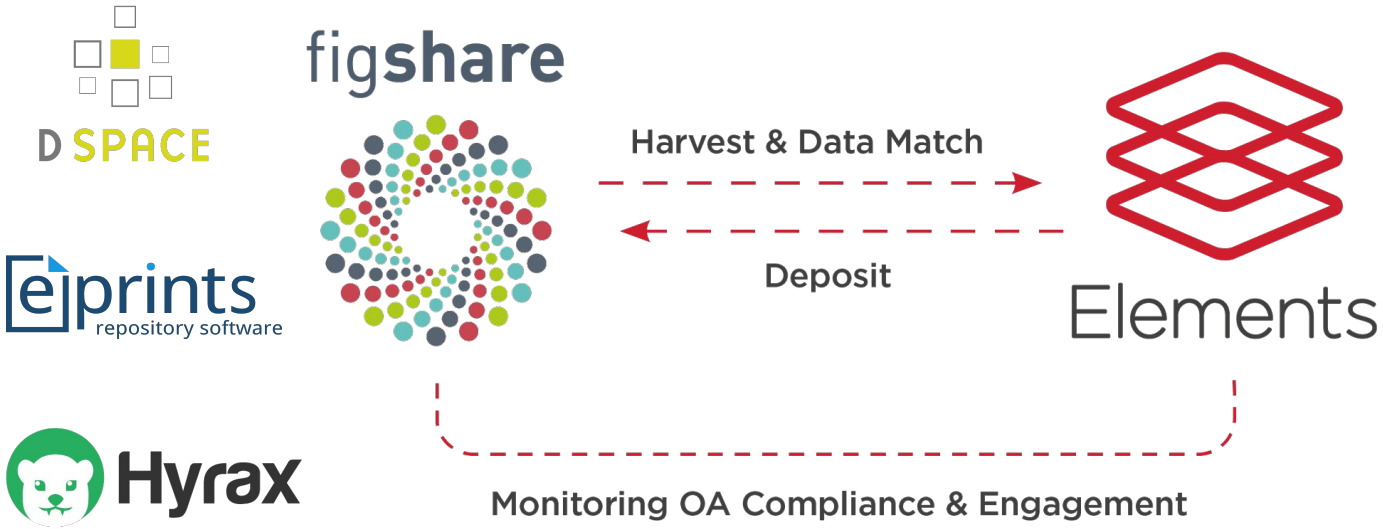
Creating rich bi-directional integrations



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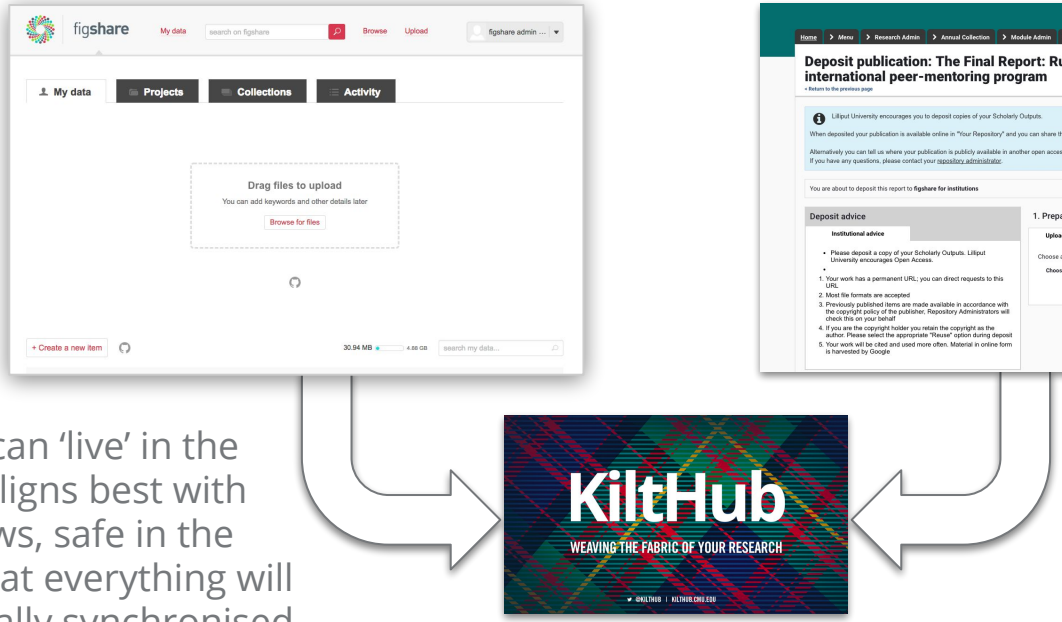
Supports flexible workflows for researchers



Researchers can ‘live’ in the system that aligns best with their workflows, safe in the knowledge that everything will be automatically synchronised between the systems

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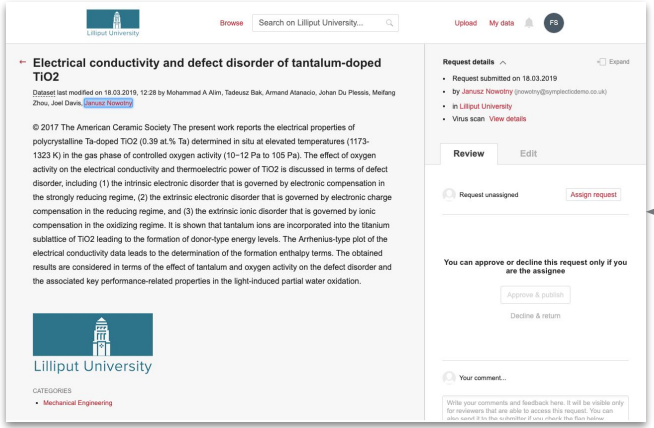
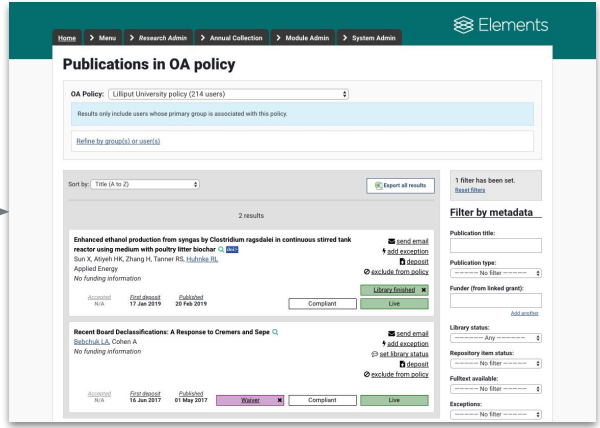
Consolidates activities for administrators





Manage repository collections including:

- Review & verify deposits
- Categorise materials
- Manage embargos
- Manage reuse licenses
- Store & preserve files

Support OA engagement & compliance including:

- Identify which outputs are ‘in policy’ (aka targeted for deposit)
- Monitor proportion of outputs that have been deposited.
- Tools to encourage deposits or deposit on researcher’s behalf.

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Maximising reuse, minimises manual effort

Data-focussed interoperability minimises time spent typing metadata into manual entry forms over and over, which in turn reduces the likelihood of typos and other human error.

Being asked to do the same task multiple times is a common source for frustration for academics and administrators alike - reducing this frees up time for more important tasks.

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Building the Network

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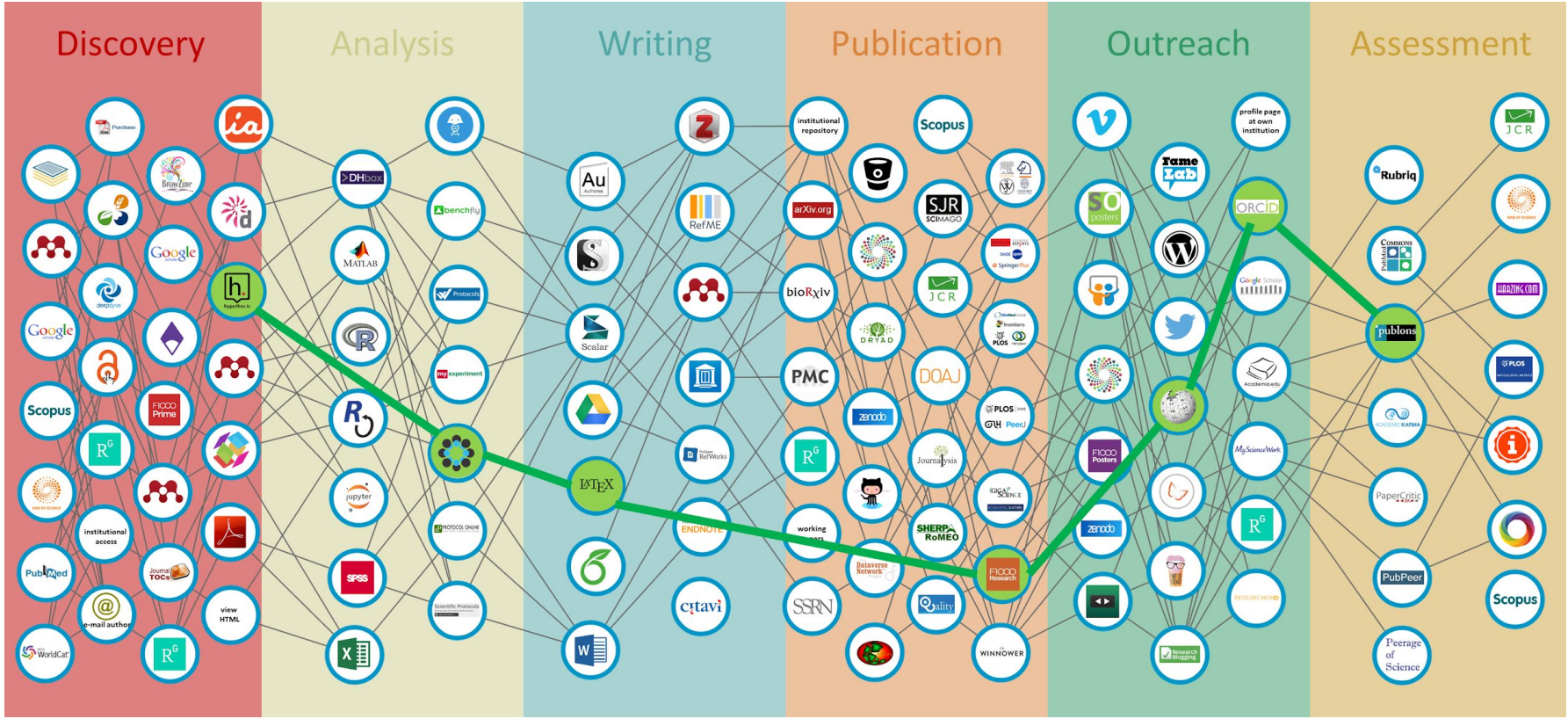
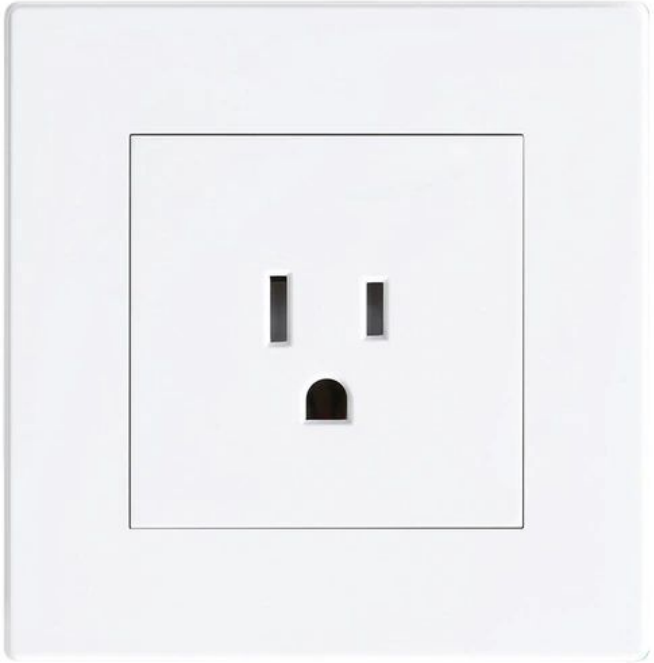
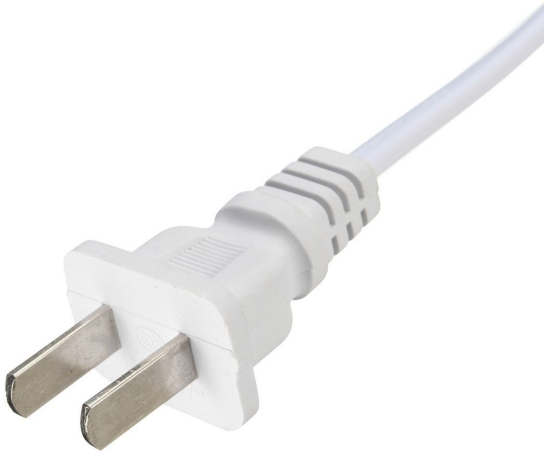
Models for integrations



Foundations for interconnectivity





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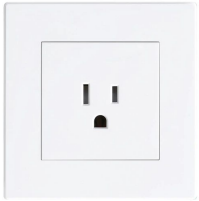
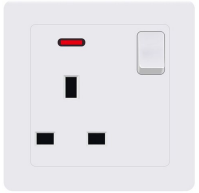
Foundations for interconnectivity





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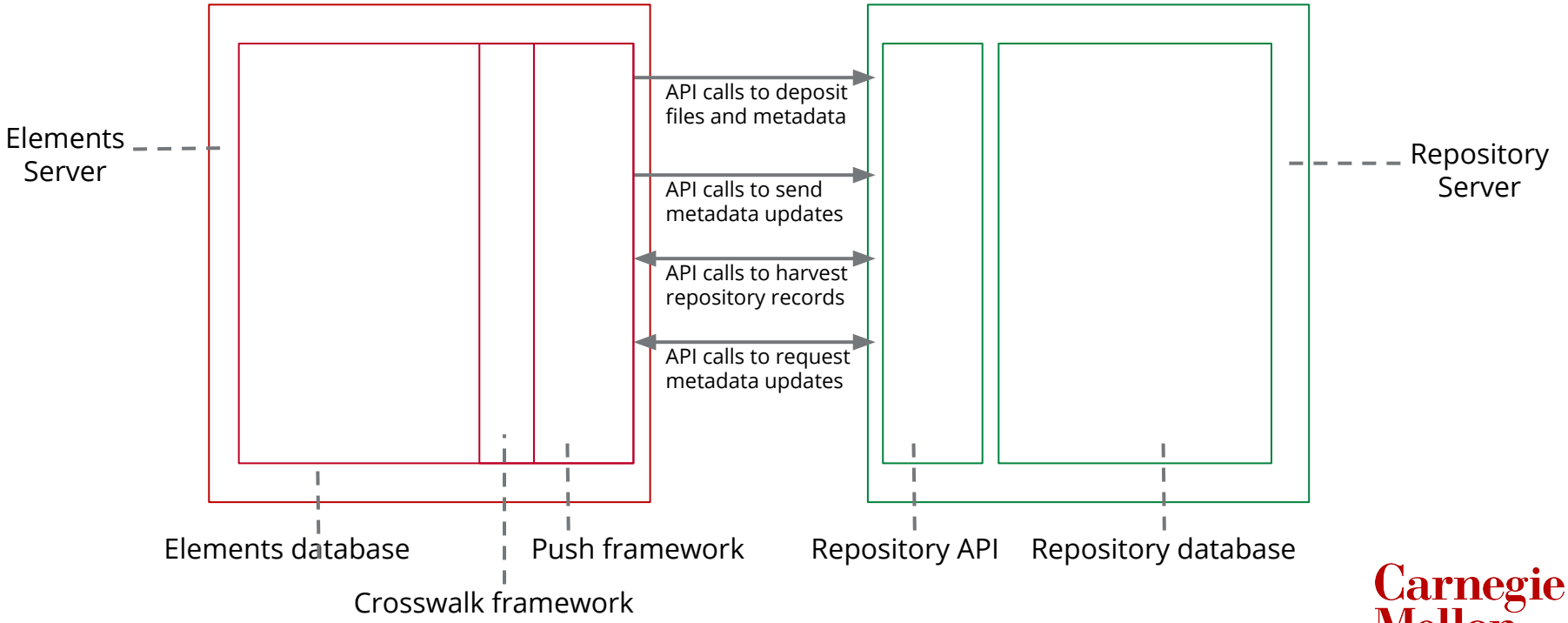
Under the hood of our bi-directional integrations



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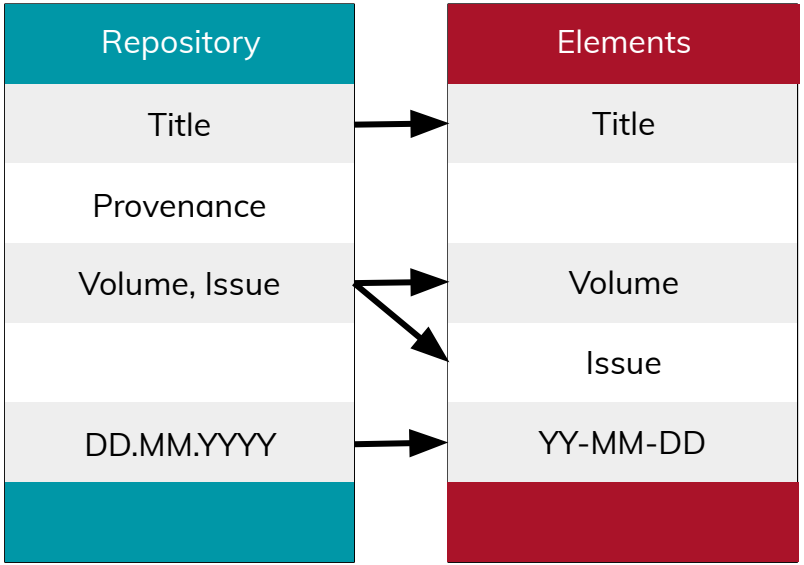
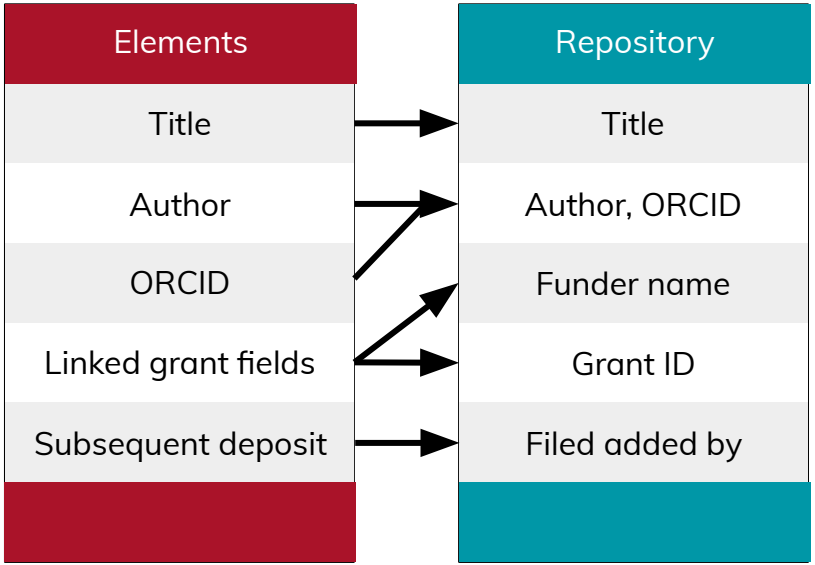
Crosswalks & translation layers

Harvest crosswalks



Deposit crosswalks



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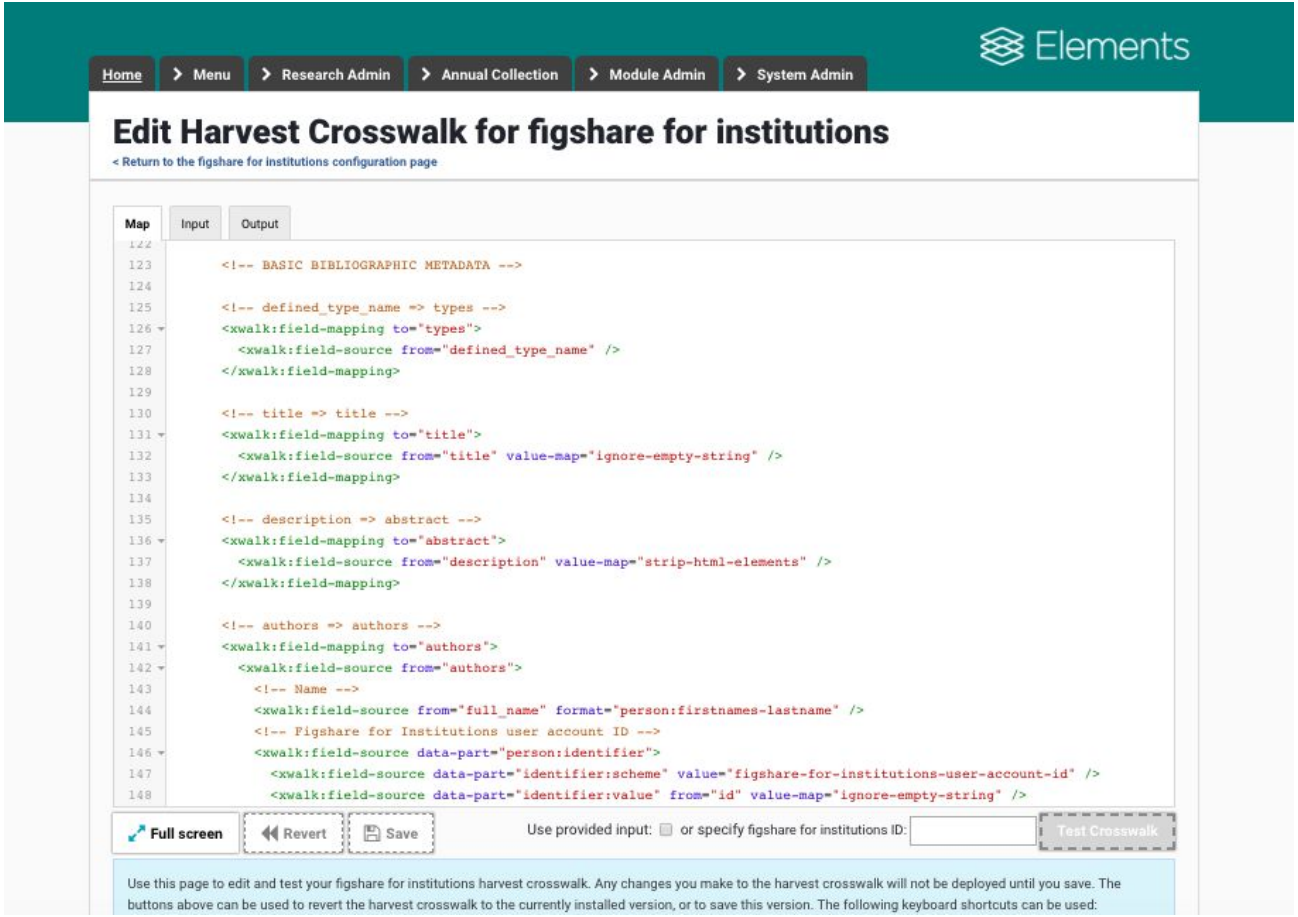

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Cite Share + Collect (you need to log in first)

DataCite

Gu, Peishi; Li, Hugh Z.; Ye, Qing; Robinson, Ellis; Apte, Joshua S.; Robinson, Allen; et al. (2019): Intracity Variability of Particulate Matter Exposure Is Driven by Carbonaceous Sources and Correlated with Land-Use Variables. figshare. Journal contribution.

Select your citation style and t
your mouse over the citation t
select it.

Repository DOI

https://doi.org/10.1184/R1/7568579.v1

Intracity Variability of Particulate Matter Exposure Is Driven by Carbonaceous Sources and Correlated with Land-Use Variables

305 views | 0 downloads

Journal Contribution posted on 23.09.2018, 20:00 by Peishi Gu, Hugh Z. Li, Qing Ye, Ellis Robinson, Joshua S. Apte, Allen Robinson, Albert Presto

CATEGORIES

- Atmospheric Sciences
- Atmospheric Aerosols

DataCite

NLM

DC

FUNDING

Center for Air, Climate, and Energy Solutions (CACES)
Environmental Protection Agency

Spatial Variability in Organic Aerosol: Relationships between Sources, Processing, and Composition
Directorate for Geosciences

TIMELINE

Posted date
24.09.2018

First online date
Revision date
Submission date
09.01.2019

REFERENCES

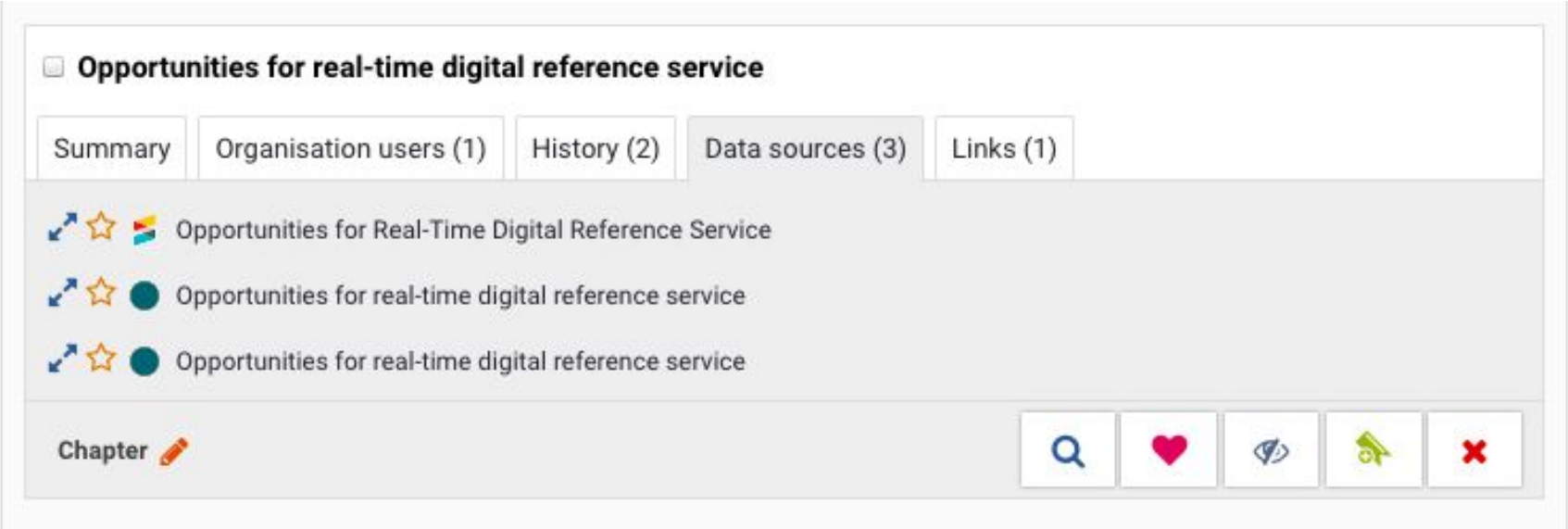
- https://pubs.acs.org/doi/10.1021/acs.est.8b03833
- https://doi.org/10.1184/R1/7353287

Publisher's DOI

PUBLISHER STATEMENT

This is the author's accepted manuscript version of, " Gu, P., Li, H., Ye, Q., Robinson, E., Apte, J., Robinson, A., & Presto, A. (2018). Intracity Variability of Particulate Matter Exposure Is Driven by Carbonaceous Sources and Correlated with Land-Use Variables. Environmental Science & Technology, 52(20), 11545–11554. https://doi.org/10.1021/acs.est.8b03833."

Mutiple Sources



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CMU Crosswalks & Translations

Publisher DOI Present

Publisher DOI Not Present

Carnegie Mellon University

CMU Crosswalks

Publisher DOI Present

Scopus® SciVal

WEB OF SCIENCE™

Publisher DOI Not Present

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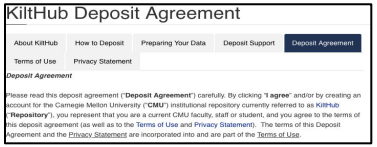
Carnegie Mellon University's workflows

Metadata Harvesting & Content Matching

Monitoring OA Status and Engagement

Elements

Content Verification, Submission, and Deposit



SHERPA RoMEO

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Why this Matters

Why this matters for institutions

"Institutional Collaborators" by OCLC Research, from *Research Information Management: Defining RIM and the Library's Role* (doi.org/10.25333/C3NK88), CC BY 4.0

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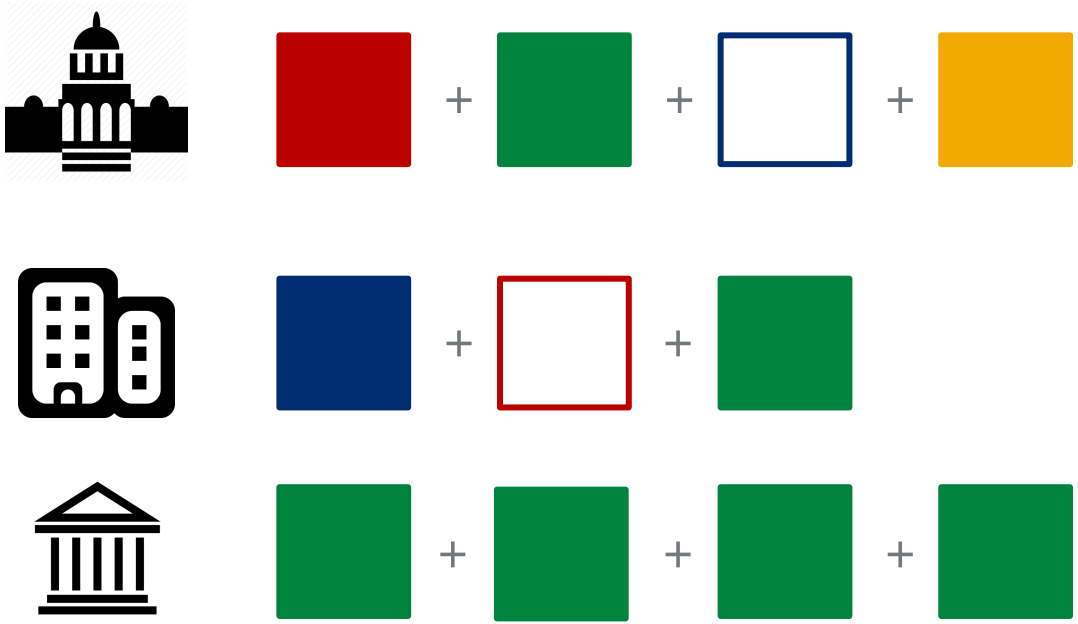
Integrations = Choices



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Why it matters to do it the right way?

We need to make integrations **sustainable and scalable.**

Symplectic supports over 80 repository integrations for over 70 institutions - we need to ensure those integrations meet our clients needs but also are **easy to implement, use, manage and maintain.**

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Future of Repositories and RIMS

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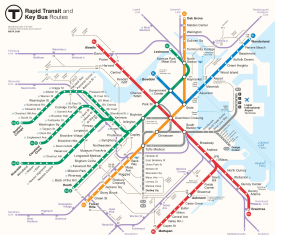
Continuing to build the network

Interoperability is paramount

- APIs should be standard
- Also translation layers & admin toolsets
- Power to swap out any one system

Wider range of integrations between systems

- Connections in line with the research lifecycle
- Consider opportunities for chaining together integrations



Flexible workflows & configurability

- Consistent but still configurable.
- Support choice eg. multiple deposit options.

Socket Wrench and Sockets by Kae. CC-BY 3.0

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Enhanced interoperability starts with asking questions

Creating connections

- Does the platform offer APIs or other kinds of interfaces for feeding & receiving data from other systems? Automated/manual
- What kinds of operations do the APIs support? Read/Write/Update etc.

Metadata Quality

- Which metadata standards does the system use?
- Does the system offer crosswalks/translation layers or other kinds of metadata mapping tools?
- How does the system handle metadata updates?

Sustainability

- What tools does the system offer to help maintain the integration?
- How does the system manage data at volume?
- How can we configure the integration to meet our needs?

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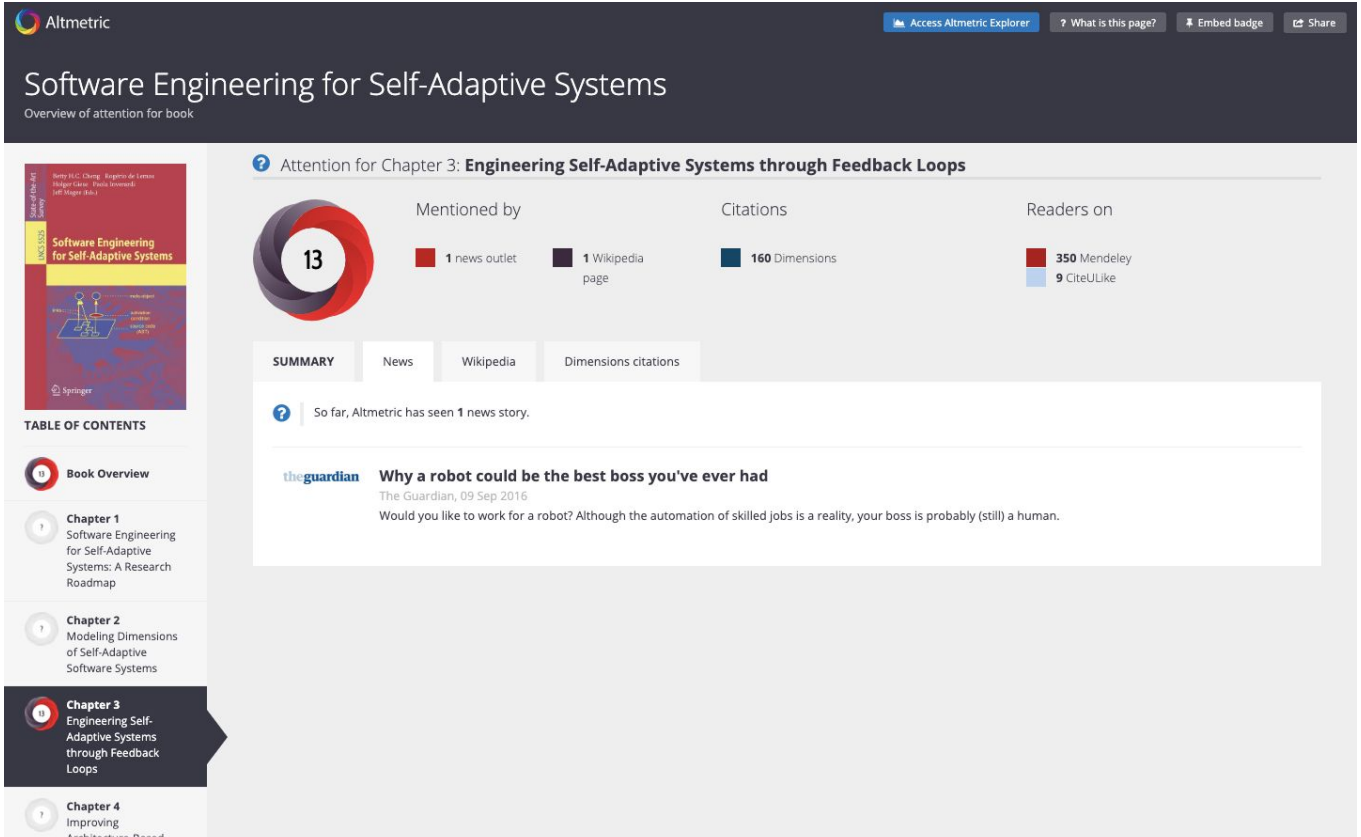
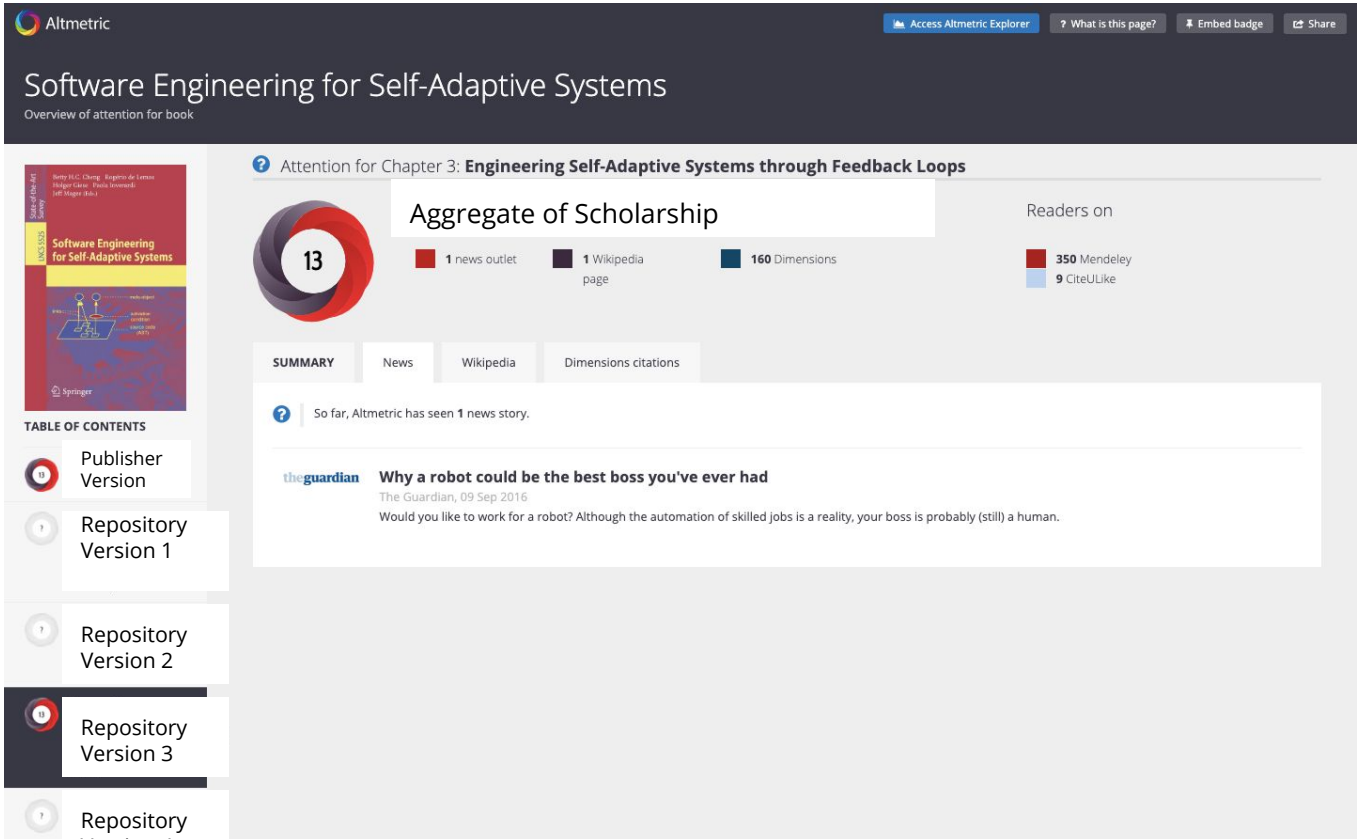
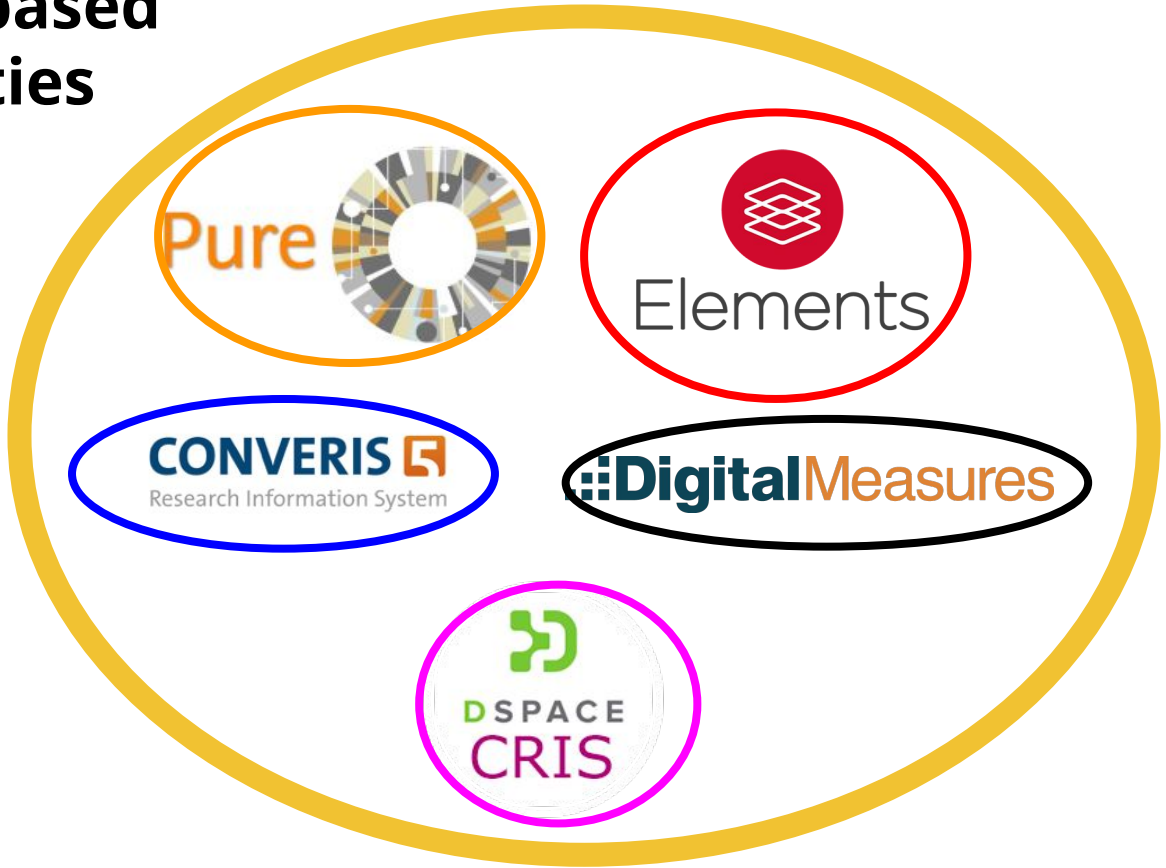
Integrated Data Models



Integrated Data Models



Platform-based Communities



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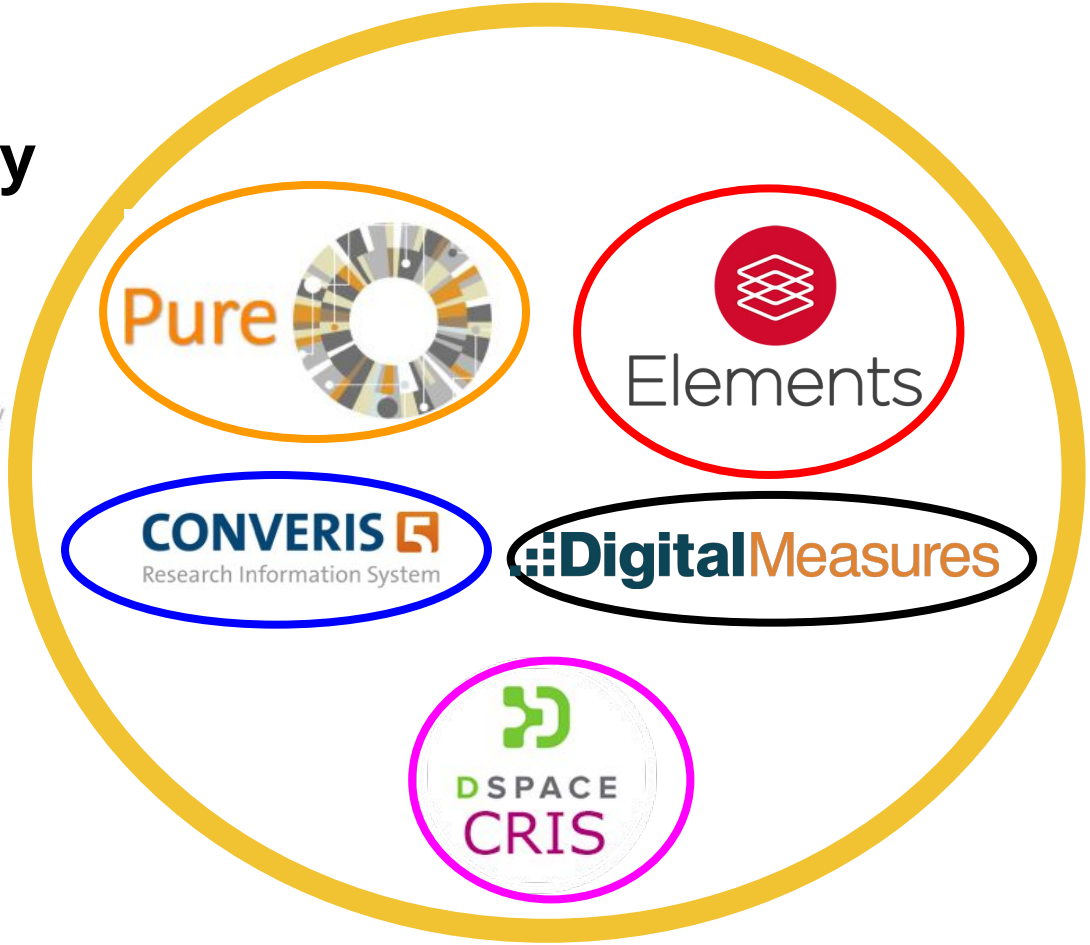
Global Community



ARMS
Australasian Research Management Society

uk
arma
Association of Research Managers and Administrators

euroCRIS
Current Research Information Systems

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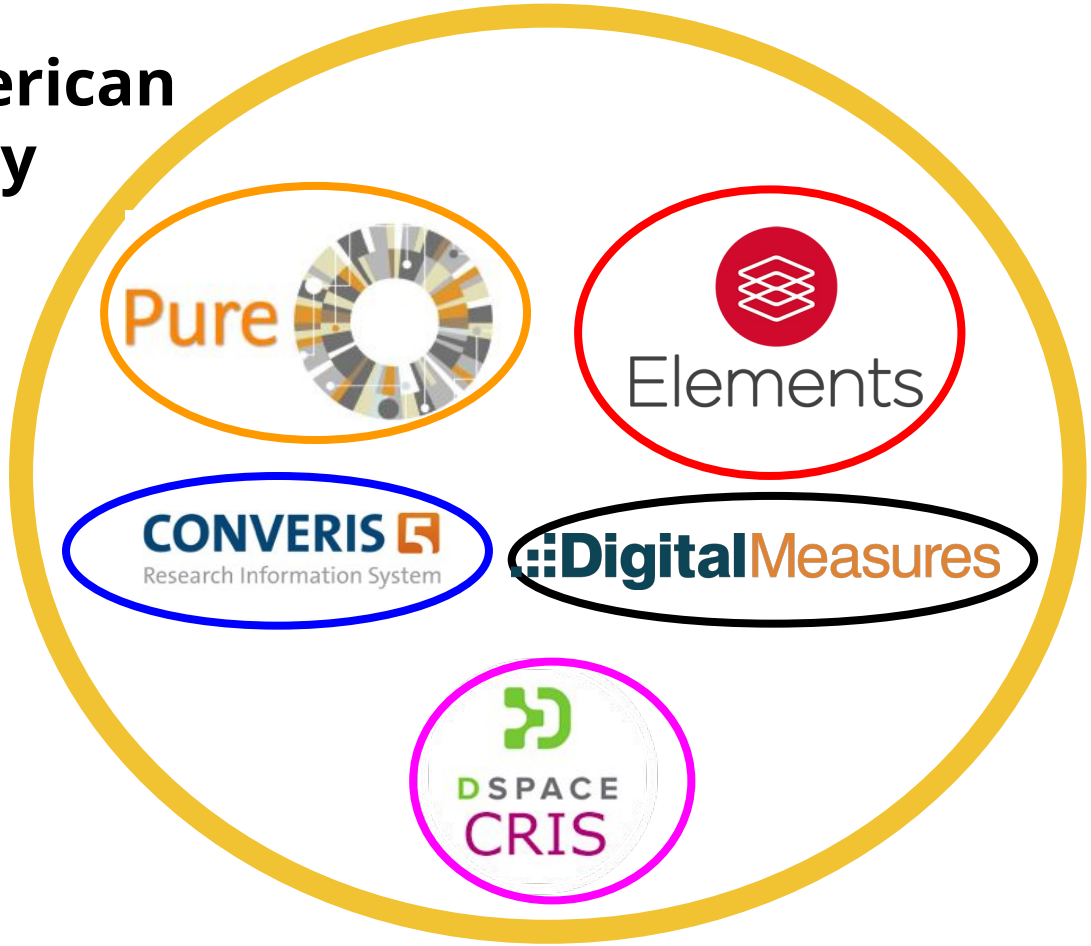
North American Community



OCLC

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Question/Comments

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