

🇪🇸 Español 🇧🇷 Português

October 22-25, 2013  
São Paulo, Brazil

SciELO 15 years

FAPESP  
FAP  
IBICT  
Ministério da Saúde  
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OPEN SOCIETY FOUNDATIONS  
Associação Brasileira de Editores Científicos A B E C  
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FUNDEC  
Fundação Getúlio Vargas

# Supporting International Research Networking

Katy Börner, Cyberinfrastructure for Network Science Center  
School of Informatics and Computing  
Indiana University, USA

October 24, 2013

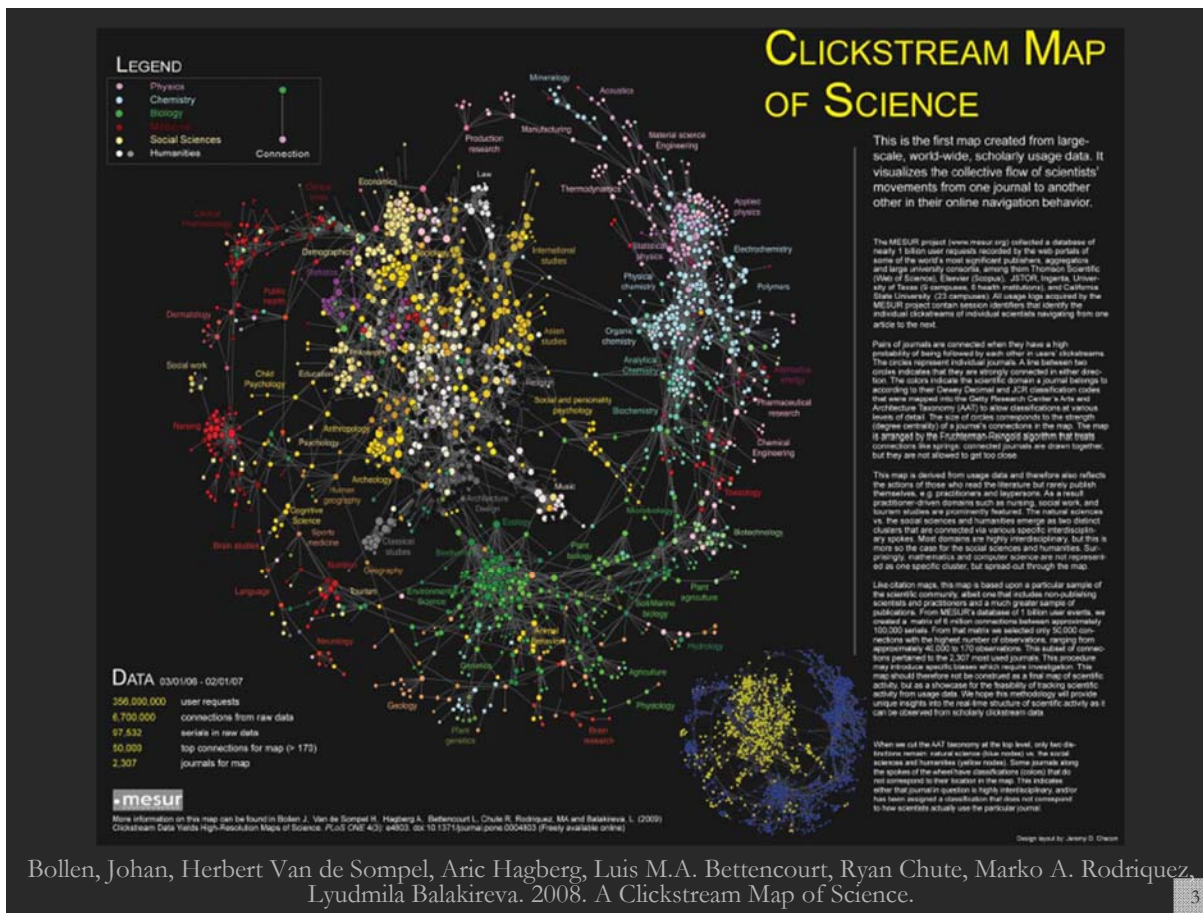


## Map of Scientific Collaborations from 2005-2009

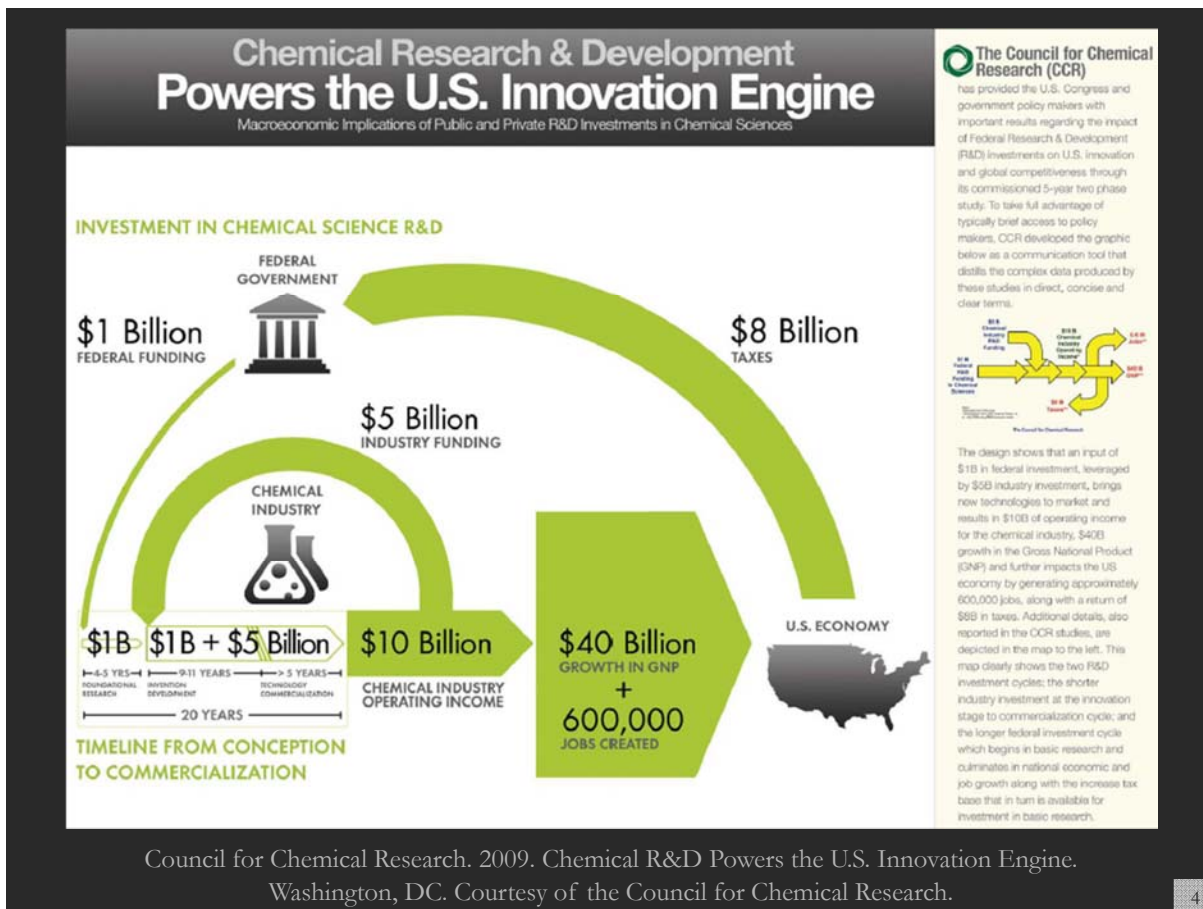


Computed Using Data from Elsevier's Scopus

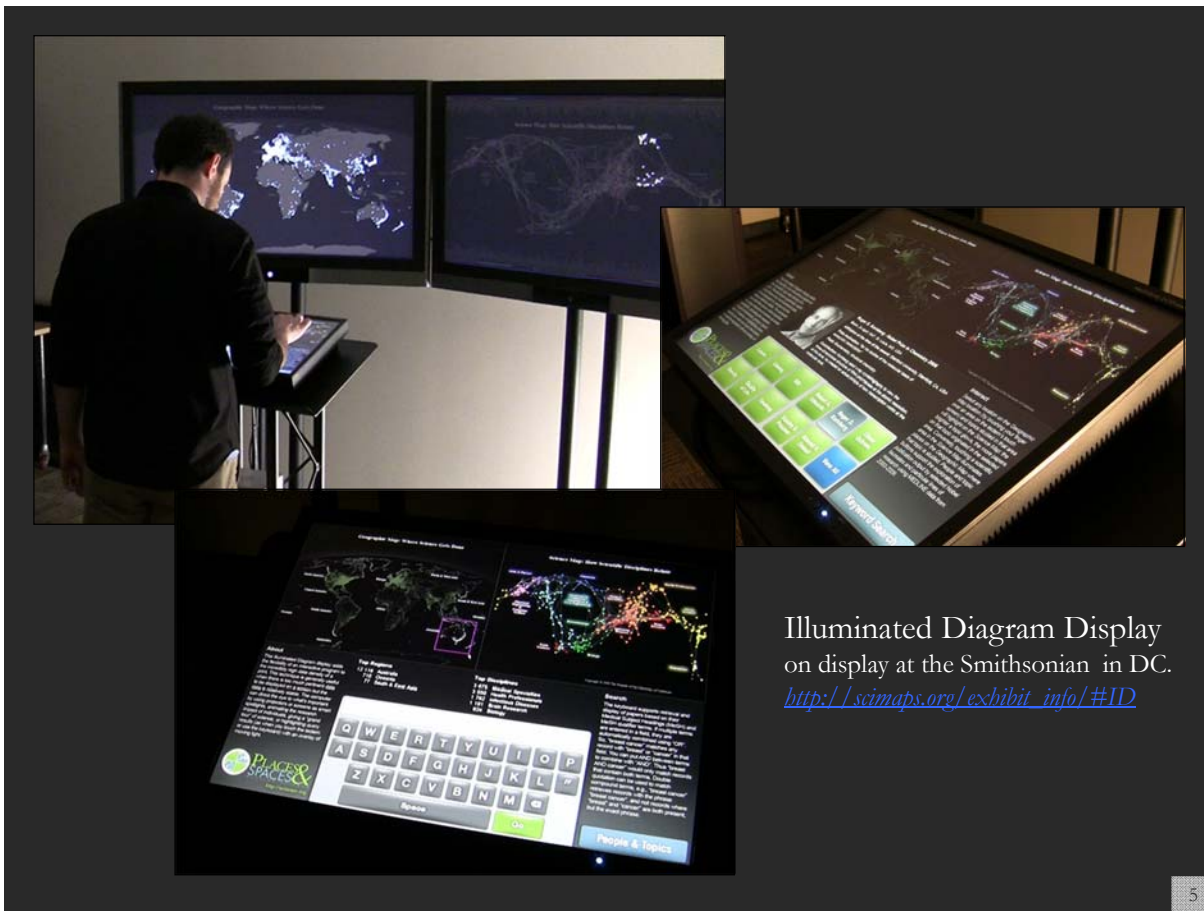
Olivier H. Beauchesne, 2011. Map of Scientific Collaborations from 2005-2009.



Bollen, Johan, Herbert Van de Sompel, Aric Hagberg, Luis M.A. Bettencourt, Ryan Chute, Marko A. Rodriguez, Lyudmila Balakireva. 2008. A Clickstream Map of Science. 3



Council for Chemical Research. 2009. Chemical R&D Powers the U.S. Innovation Engine. Washington, DC. Courtesy of the Council for Chemical Research. 4



Illuminated Diagram Display  
on display at the Smithsonian in DC.

[http://scimaps.org/exhibit\\_info/#ID](http://scimaps.org/exhibit_info/#ID)

### Geographic Map: Where Science Gets Done

### Science Map: How Scientific Disciplines Relate

**About**

This Illuminated Diagram display adds the flexibility of an interactive program to the incredibly high data density of a print. This technique is generally useful when there is too much pertinent data to be displayed on a screen but the data is relatively stable. The computer can direct the eye to what's important by using projectors or screens as smart spotlights, animating the research impact of individuals, giving a "grand tour" of science, or highlighting query results (as when you touch the lectern or use the keyboard) with an overlay of moving light.

**Top Five Continents**

- North America - 4,000 records
- South & East Asia - 3,589
- Australia - 2,431
- Africa - 2,208
- South America - 1,562

**Top Five Scientific Disciplines**

- Math & Physics - 4,000 records
- Health Professionals - 3,589
- Social Sciences - 2,431
- Aeronautical, Chemical, Mechanical & Civil Engineering - 2,208
- Humanities - 1,562

**Search**

The keyboard supports retrieval and display of papers based on their Medical Subject Headings (MeSH) and MeSH qualifier terms. If multiple terms are entered in a field, they are automatically combined using "OR". So, "breast cancer" matches any record with "breast" or "cancer" in that field. You can put AND between terms to combine with "AND". Thus "breast AND cancer" would only match records that contain both terms. Double quotation can be used to match compound terms, e.g., "breast cancer" retrieves records with the phrase "breast cancer", and not records where "breast" and "cancer" are both present, but the exact phrase.

Input your search query here.

Q	W	E	R	T	Y	U	I	O	P
A	S	D	F	G	H	J	K	L	"
Z	X	C	V	B	N	M			
Space									Go

<http://scimaps.org>

**People & Topics**



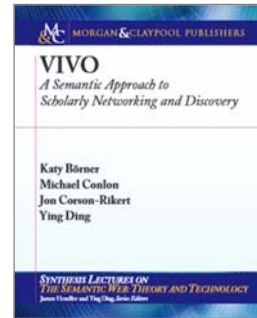
Science Maps in “Expedition Zukunft” science train visiting 62 cities in 7 months 12 coaches, 300 m long Opening was on April 23<sup>rd</sup>, 2009 by German Chancellor Merkel  
<http://www.expedition-zukunft.de>



Interested to host the exhibit?  
[scimaps.org/contact](http://scimaps.org/contact)

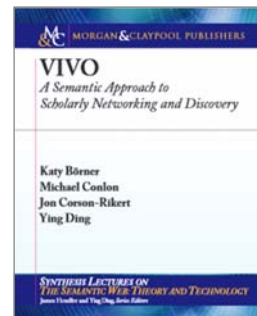
## Overview

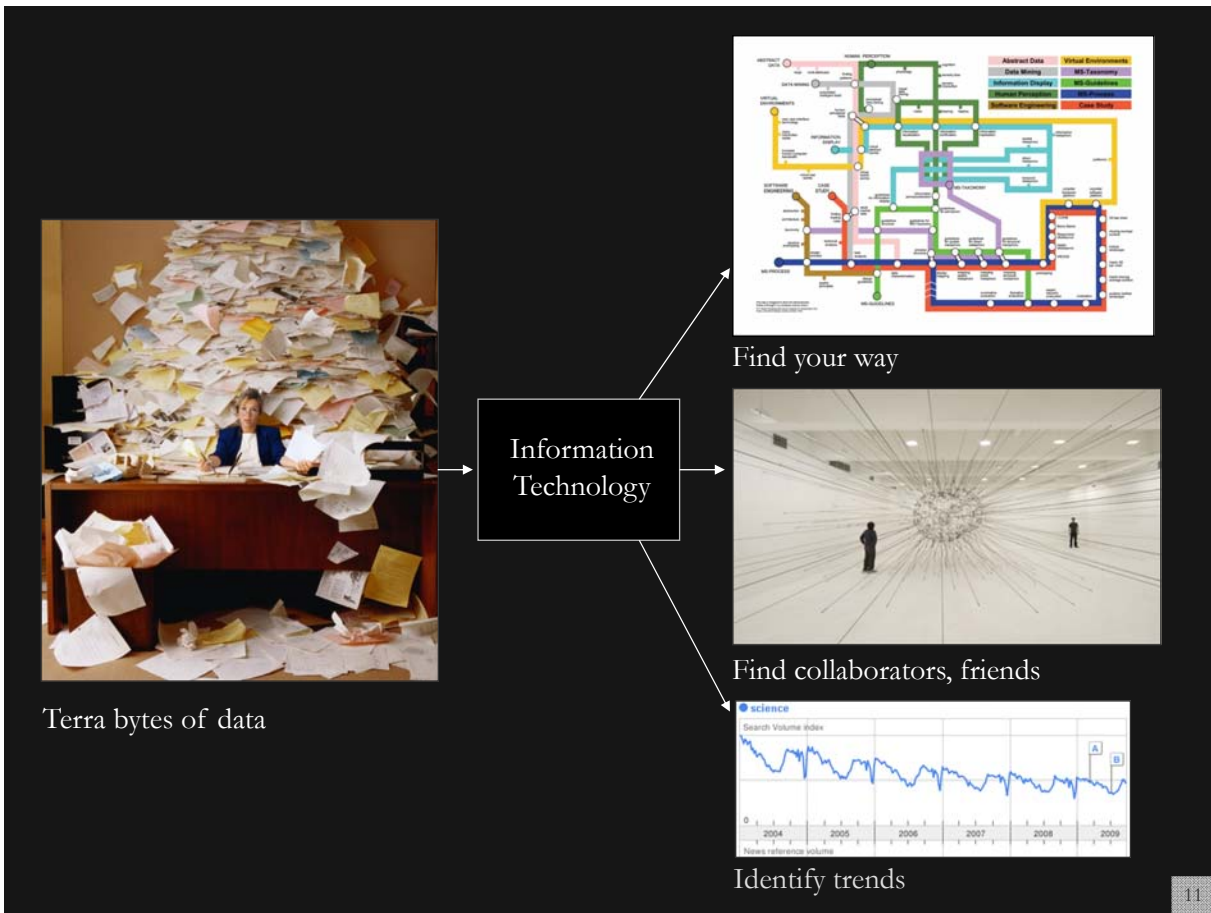
1. **Research Networking Services** that aim to support collaborations, research management, and the flow of knowledge/expertise.
2. **VIVO Approach and Visualizations** that help answer When, Where, What, With Whom questions.
3. **Outlook** how to scale and commoditize data mining and visualizations of research networking data.



## Overview

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3. **Outlook** how to scale and commoditize data mining and visualizations of research networking data.





## LinkedIn: World's Largest Professional Network

<https://www.linkedin.com>

Founded in December 2002 and launched on May 5, 2003.

in Search for people, jobs, companies, and more... Advanced 394 10

Home Profile Network Jobs Interests

! Don't get locked out of your account! Please add another email to make sure you can always sign in. This is important.

**Katy Borner**  
Member since: February 27, 2005

Primary Email Change/Add  
katy@indiana.edu

Payment  
View purchase history

Password Change

Account Type: Basic  
Compare account types

Get More When You Upgrade!  
More communication options  
Enhanced search tools  
Upgrade

InMails  
0 available Purchase

Introductions  
5 of 5 available Upgrade

Profile  
Communications  
Groups, Companies &

Privacy Controls  
Manage Advertising Preferences  
Settings  
Change your profile photo & visibility >

Email & Password  
Add & change email address  
Change password  
Helpful Links

Invitations (368) ▶

- Eric Archambault  
President and CEO, Science-Metrix  
Oct 20
- Jordan Lippman  
Founder and Principal Scientist at NameGames, LLC  
Oct 17
- Julie Hewett, CMP  
Owner JulNet Solutions, LLC - An Association & Event Management Company  
Oct 17

Messages (26) ▶

- Marc Smith  
Marc Smith invites you to...  
I would like to invite you to join my group on LinkedIn. -Marc  
Sep 8
- LinkedIn  
Geoffrey Hobart has added you...  
Jul 9

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# ResearchGate GmbH

<https://www.researchgate.net>

Launched in May 2008, has a user base of 2.3 million scientists worldwide in Aug .2013

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# Academia.edu—Share Research

<http://www.academia.edu>

Launched in Nov 2010.

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# Networking Services—60 More

This table provides general information for each tool: name, developing institution, external links to information, whether the code is [Open Source](#) and known adopters of the software.

Research Networking Tool	Link to Product Page	Developer/Owner	Open Source	Adopters
Activity Insight	<a href="#">Activity Insight</a>	Digital Measures	No	USC Marshall School of Business
C-IKNOW <sup>[5][6]</sup>	<a href="#">C-IKNOW</a>	Science of Networks in Communities (SONIC) - Northwestern University	Yes	National Cancer Institute, National Science Foundation
Collaborative Partnership / Profile System	<a href="#">Collaborative Partnership and Research Expertise at UT Arlington</a>	University of Texas at Arlington	Yes	UT Arlington, UT Pan American, University of North Texas Health Science Center, UT El Paso, UT San Antonio, UT Tyler, UT Health Science Center, University of North Texas, UT Dallas, UT Health Center at Tyler, Texas Christian University, (plans to add Gulf Coast Consortia: Rice University, Baylor College of Medicine)
Community Academic Profiles - CAP	<a href="#">Community Academic Profiles</a>	Stanford University	No	Stanford University
Curvita™ Profile Manager	<a href="#">Curvita Profile Manager</a>	SciMed Solutions	No	University of North Carolina
CUSP - Columbia University Scientific Profiles	<a href="#">CUSP</a>	Columbia University	No	Columbia University
Digital Vita	<a href="#">DigitalVita</a>	Center for Dental Informatics - University of Pittsburgh	Yes	University of Pittsburgh, Pitt Health Sciences Center
Elsevier's SciVal Experts (formerly Collexis Expert Profiling)	<a href="#">SciVal Experts</a>	Elsevier	No	45+ implementations worldwide containing profiles for researchers at 65+ institutions. Customers include Johns Hopkins University, Memorial Sloan-Kettering, Northwestern University, REACH NC, University of Michigan, University of Texas MD Anderson Cancer Center, and several institutions in Asia-Pacific, Europe and Latin America. See SciVal

[http://en.wikipedia.org/wiki/Comparison\\_of\\_Research\\_Networking\\_Tools\\_and\\_Research\\_Profiling\\_Systems](http://en.wikipedia.org/wiki/Comparison_of_Research_Networking_Tools_and_Research_Profiling_Systems)

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## Direct2Experts –Federated Network of Biomedical Research Expertise

<http://direct2experts.org>

**DIRECT2Experts**

Distributed Interoperable Research Experts Collaboration Tool

A Federated Network of Biomedical Research Expertise  
DIRECT-ly Supported by Researchers' Institutions

[Home](#) | [About](#) | [Phase 1 - Aggregate Search](#) | [Phase 2 - Linked Open Data](#) | **New!** - [Integrated Search](#) | [Participants](#) | [JAMIA Article](#)

### A Network for All

The DIRECT2Experts network, open to all biomedical institutions, is a pilot project facilitated by the Research Networking Working Group of the NIH-supported Clinical & Translational Science Award (CTSA) Consortium.

### Our Goal

To improve biomedical research and leverage our strengths as a community by creating a network that enables easy access to expertise and related resources across institutions regardless of local platforms and tools, and in collaboration with participating institutions to ensure access to approved and verified data.

### What makes DIRECT2Experts different?

- Rather than searching public databases or asking individual researchers to "sign-up", DIRECT2Experts works directly with institutions to connect to their existing research networking tools.
- DIRECT2Experts works across different software products and respects local privacy policies, enabling many institutions to participate.
- The focus of DIRECT2Experts is to bring more institutions and investigators into the fold, allowing for an assessment of the value provided and challenges of searching a national network.

**Find Experts:**

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## Participants

The institutions currently participating in DIRECT2Experts are listed below. Note that institutions can participate in different ways, and not all have research networking tools connected to DIRECT2Experts yet.

1. Albert Einstein College of Medicine - [SciVal Experts](#)
2. Arizona State University - [SciVal Experts](#)
3. Baylor College of Medicine - [Profiles RNS](#)
4. Boston University - [Profiles RNS](#)
5. Case Western Reserve University - [SciVal Experts](#)
6. Cornell University - [VIVO](#)
7. CTSI at Children's National - [SciVal Experts](#)
8. David Geffen School of Medicine at UCLA - [UCLA CTSI](#)
9. Georgia Regents University - [SciVal Experts](#)
10. Harvard University - [Profiles RNS](#)
11. Indiana CTSI - [CTSI HUB](#)
12. Indiana University School of Medicine - [SciVal Experts](#)
13. Instituto Politecnico Nacional - [SciVal Experts](#)
14. John Hopkins University - [SciVal Experts](#)
15. Kanazawa University - [SciVal Experts](#)
16. MD Anderson - [SciVal Experts](#)
17. MEHARRY Medical Collage - [SciVal Experts](#)
18. Memorial Sloan-Kettering Cancer Center - [SciVal Experts](#)
19. Michigan Alliance for Clinical and Translational Science - [SciVal Experts](#)
20. Michigan State University - [SciVal Experts](#)
21. National Institute of Immunology (India) - [SciVal Experts](#)
22. Northwestern University - [SciVal Experts](#)
23. Northwestern University Feinberg School of Medicine - [LatticeGrid](#)
24. Ohio State University Health Sciences - [SciVal Experts](#)
25. Oregon Health & Science University - [SciVal Experts](#)
26. Pennsylvania State University - [Profiles RNS](#)
27. Ponce School of Medicine - [VIVO](#)
28. Qatar University - [SciVal Experts](#)
29. RTRN (18 RCMI Institutions) - [Profiles RNS](#)
30. Shibaura Institute of Technology - [SciVal Experts](#)
31. South Carolina (HSSC/SCTR) - [Profiles RNS](#)
32. Stanford University School of Medicine - [CAP](#)
33. Temple University Center for Clinical & Transl. Science - [SciVal Experts](#)
34. The Scripps Research Institute - [VIVO](#)
35. The University of Alabama at Birmingham - [SciVal Experts](#)
36. UAE University - [SciVal Experts](#)
37. UC Davis Health System - [SciVal Experts](#)
38. Universidad Autonoma de Queretaro - [SciVal Experts](#)
39. Universidad de Santiago de Chile - [SciVal Experts](#)
40. Universitat Autònoma de Barcelona Campus of International Excellence - [SciVal Experts](#)
41. Universiti Kebangsaan Malaysia - [SciVal Experts](#)
42. University of California, San Francisco - [Profiles RNS](#)
43. University of Colorado Profiles - [Profiles RNS](#)
44. University of Connecticut Health Center - [Profiles RNS](#)
45. University of Florida - [VIVO](#)
46. University of Illinois at Chicago - [SciVal Experts](#)
47. University of Iowa - [Loki](#)
48. University of Maryland - [SciVal Experts](#)
49. University of Massachusetts - [Profiles RNS](#)
50. University of Miami - [SciVal Experts](#)
51. University of Michigan - [SciVal Experts](#)
52. University of Minnesota - Academic Health Center - [Profiles RNS](#)
53. University of Minnesota - Twin Cities Campus - [SciVal Experts](#)
54. University of Nebraska - [SciVal Experts](#)
55. University of Pittsburgh - [Digital Vita](#)
56. University of Porto - [SciVal Experts](#)
57. University of Rochester Medical Center - [Profiles RNS](#)
58. University of Southern California - [Profiles RNS](#)
59. University of Texas Health Science Center at Houston (UTHealth) - [SciVal Experts](#)
60. University of Washington - [SciVal Experts](#)
61. UT Health Northeast/UTHSC Tyler - [SciVal Experts](#)
62. UT Health Science Center - [SciVal Experts](#)
63. UT Medical Branch at Galveston - [SciVal Experts](#)
64. UT Southwestern Medical Center - [SciVal Experts](#)
65. Wake Forest Baptist Medical Center - [Profiles RNS](#)
66. Washington State University - [SciVal Experts](#)
67. Washington University in St. Louis - [VIVO](#)
68. Wayne State University - [SciVal Experts](#)
69. Weill Cornell Medical College - [VIVO](#)

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## CTSAConnect—A Linked Open Data approach to represent clinical and research expertise, activities, and resources

<http://www.ctsaconnect.org>

**CTSAconnect**  
Reveal Connections. Realize Potential.

Home About CTSAconnect Using CTSAconnect Publications Use Cases Contact Us

**CTSAconnect**

- Resources
  - Links
  - Glossary

**CTSAconnect: A Linked Open Data approach to represent clinical and research expertise, activities, and resources**

CTSAconnect aims to integrate information about research activities, clinical activities, and scientific resources by creating a semantic framework that will facilitate the production and consumption of Linked Open Data about investigators, physicians, biomedical research resources, services, and clinical activities. The goal is to enable software to consume data from multiple sources and allow the broadest possible representation of researchers' and clinicians' activities and research products. Current research tracking and networking systems rely largely on publications, but clinical encounters, reagents, techniques, specimens, model organisms, etc., are equally valuable for representing expertise. [Read more](#)

**CTSAconnect Development Call**

Wednesday, May 1, 2013


[Call in information below](#)

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# CTSASearch

<http://research.icts.uiowa.edu/polyglot/ctsaSearch.jsp>

118,000 profiles from 14 institutions –VIVO, Profiles, SciVal Experts, and Loki, plus custom harvests.



HOME RESEARCH EDUCATION CHILD HEALTH VOLUNTEER RESEARCH NAVIGATOR

---

**CTSASearch Home**

- CTSA Search
- CTSA Community Map
- CTSA Institution Map
- Participation Details

---

**Custom Maps**

- Chicago Women in STEM Map

---

**Comparison Approaches**

- Google Search
- Federated Search

---

**Search for Investigators at Multiple Institutions**


Text only  
 Text and UMLS concepts  
 UMLS concepts (including support for boolean search using &, |, and !)

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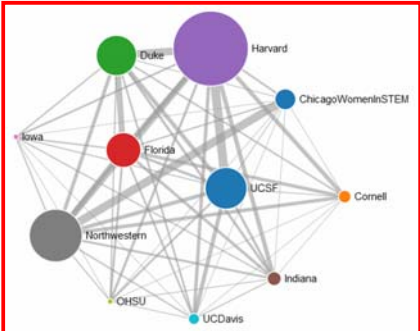
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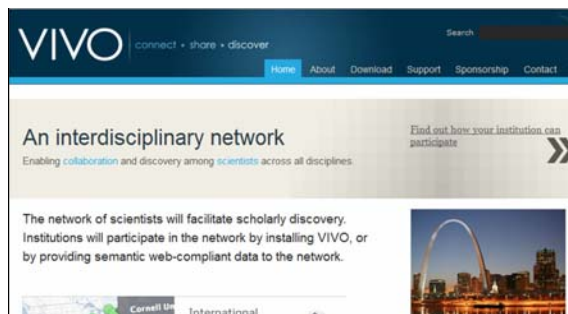
Text only  
 Text and UMLS concepts  
 UMLS concepts (including support for boolean search using &, |, and !)



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## VIVO Updates

<http://vivoweb.org>



- Align with **international standards**: Significant partners include [CASRAI](#) (Consortium Advancing Standards in Research Administration Information), [EuroCRIS](#) (Current Research Information Systems) and the [ORCID](#) (Open Researcher and Contributor ID) Initiative.
- **Adopters** of the VIVO platform include: the U.S. Department of Agriculture, the U.S. Environmental Protection Agency, the American Psychological Association and the Publish Trust Project, the Australian-based ANDS VIVO project, and a growing number of universities around the world. Producers of VIVO-compliant data also include: Clinical and Translational Science Award (CTSA) Consortium institutions, Harvard Profiles, Elements from Symplectic Limited, and Elsevier's SciVal Experts.
- Cornell pulls data from **Activity Insight**, a widely-adopted faculty reporting system from Digital Measures, and code can be shared.

*Thanks go to Jon Corson-Rikert, Cornell University.*

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## Harvard Profiles

<http://profiles.catalyst.harvard.edu/>



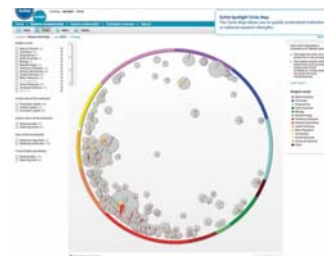
- UCSF released an update of Profiles RNS that includes **OpenSocial** support—the same front-end gadgets can now run on VIVO or Profiles RNS.
- **Scopus** data can be purchased through Elsevier's SciVal Author Profile Refinement Services and loaded into Profiles RNS.
- Boston University has developed a tool to **create ORCID IDs for their faculty** and synch publication data between ORCID and Profiles RNS. They plan to release it as open source code soon.
- Profiles RNS sites are part of Direct2Experts, CTSAConnect, and VIVOsearch.

*Thanks go to Griffin Weber, Harvard University.*

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# SciVal Experts by Elsevier

<http://www.elsevier.com/elsevier-products/scival>



- Supports **group profiles** (e.g., schools, divisions, departments OR institutes, centers, and programs OR graduate programs) but also multi-institutional instances [e.g., Solar Fuels Institute (SOFI) and Chicago Collaboration for Women in STEM sites.
- Experts can pull data from some **annual reporting/faculty information systems**, such as FASIS at Northwestern.
- **De-duplication** feature allows for the reconciliation of multiple versions of, say publication data, ingested from multiple data sources (e.g., WoS, Scopus, CrossRef, and PubMed).
- Supports **reporting**, e.g., multiple biosketch and CV templates.
- Committed to interoperability, e.g., with SciENcv.
- **ORCID IDs** are incorporated into the Scopus DB in support of author and institution refinement.

Thanks go to Holly J Falk-Krzesinski, Vice President Global Academic & Research Relations, Elsevier

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## Federal-Wide Researcher Profile Project

[RBM Home](#)

[Background](#)

[Executive Committee](#)

[Federal-Wide  
Researcher Profile  
Project](#)

[A-21 Task Force](#)

[Federal Register  
Notices](#)

[Toolkit](#)

[Archive](#)

### SciENcv

#### Science Experts Network Curriculum Vitae

#### Mission:

Create a researcher profile system for all individuals who apply for, receive or are associated with research investments from federal agencies, in order to:

- Eliminate the need to repeatedly enter biosketch information and therefore reduce the administrative burden associated with federal grant submission and reporting requirements
- Provide access to a researcher-claimed data repository with information on expertise, employment, education, and professional accomplishments
- Allow researchers to describe their scientific contributions in their own language.

#### Who We Are:

The [Federal Demonstration Partnership](#) (FDP), an association of academic research institutions and federal agencies, is developing the requirements for the SciENcv platform in concert with an Interagency Workgroup that operates under the NSTC's [Research Business Models](#) and [Science of Science Policy](#) Committees. The SciENcv project is closely connected to the [STAR METRICS](#) program. The underlying data model is being built by the [National Center of Biotechnology Information](#) (NCBI) at the National Institutes of Health (NIH) in collaboration with FDP and the Department of Defense, the Department of Energy, the Environmental Protection Agency, the National Science Foundation and the United States Department of Agriculture.

[http://rbm.nih.gov/profile\\_project.htm](http://rbm.nih.gov/profile_project.htm)

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<http://nrn.cns.iu.edu>

Light, Robert, Chin Hua Kong, and Katy Börner. 2013. "*An Automated System for Tracking the Growth of Expert Profiling Systems*". *Joint Conference on Digital Libraries (JCDL)*.

25

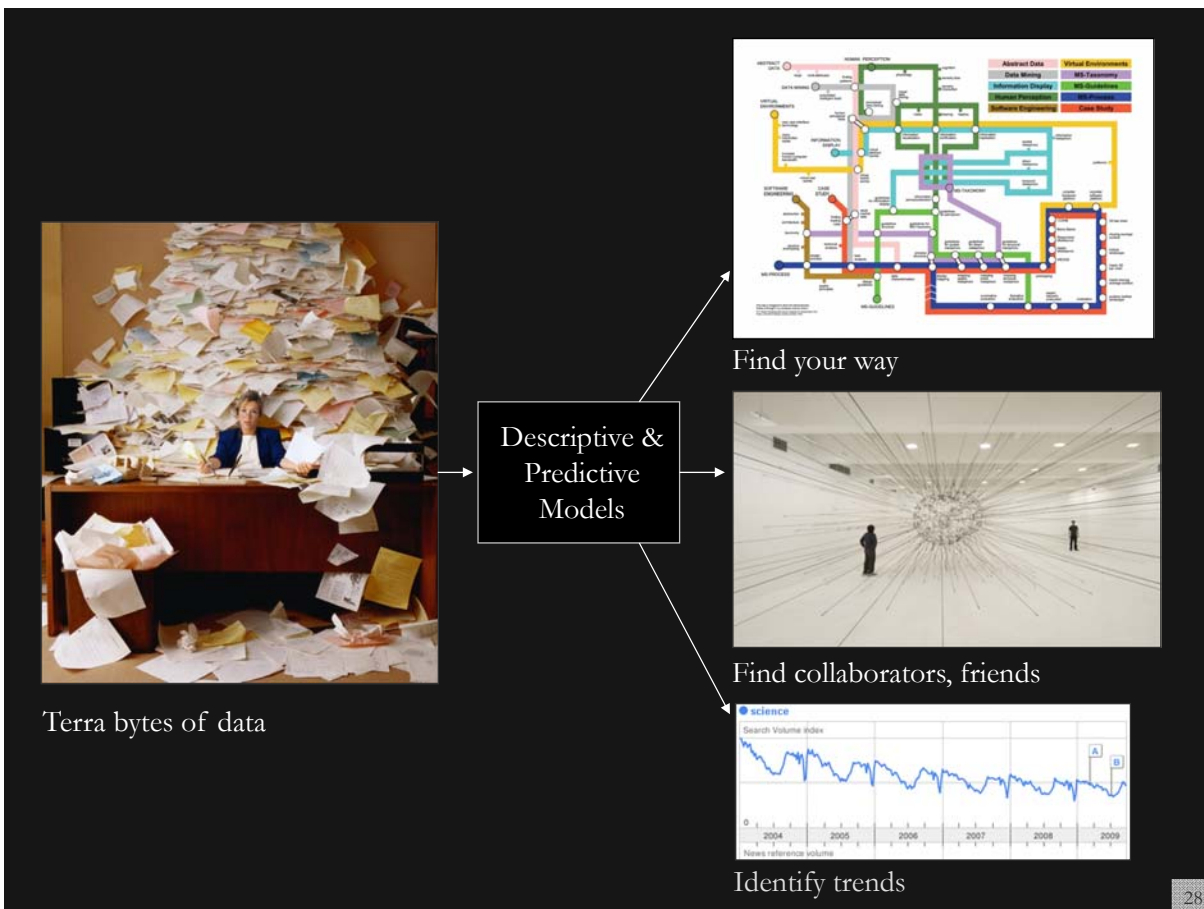
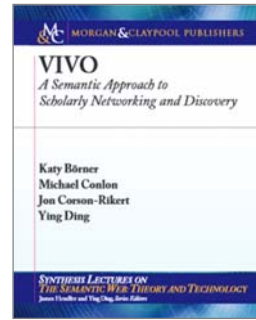
## Expert Networking Services

### Desirable Properties

- Open data
- Open code
- Easy harvesting and ingest of major publication datasets, e.g., MEDLINE, Elsevier, Reuters, SciELO, others.
- Inter-platform compatibility—VIVO, Profiles, SciVal Experts, Loki, etc.
- Part of federated search tools, Direct2Experts, CTSAconnect, and SciVal Community, etc.
- Supports/uses DOIs, author identifiers, e.g., ORCID
- Sustainable

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# Type of Analysis vs. Level of Analysis

	<i>Micro/Individual (1-100 records)</i>	<i>Meso/Local (101-10,000 records)</i>	<i>Macro/Global (10,000 &lt; records)</i>
<b>Statistical Analysis/Profiling</b>	Individual person and their expertise profiles	Larger labs, centers, universities, research domains, or states	All of NSF, all of USA, all of science.
<b>Temporal Analysis (When)</b>	Funding portfolio of one individual	Mapping topic bursts in 20-years of PNAS	113 Years of physics Research
<b>Geospatial Analysis (Where)</b>	Career trajectory of one individual	Mapping a state's intellectual landscape	PNAS publications
<b>Topical Analysis (What)</b>	Base knowledge from which one grant draws.	Knowledge flows in Chemistry research	VxOrd/Topic maps of NIH funding
<b>Network Analysis (With Whom?)</b>	NSF Co-PI network of one individual	Co-author network	NSF's core competency

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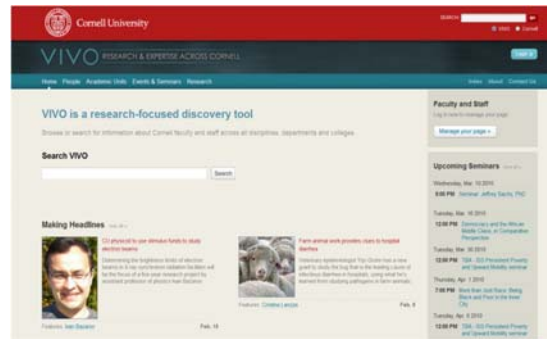
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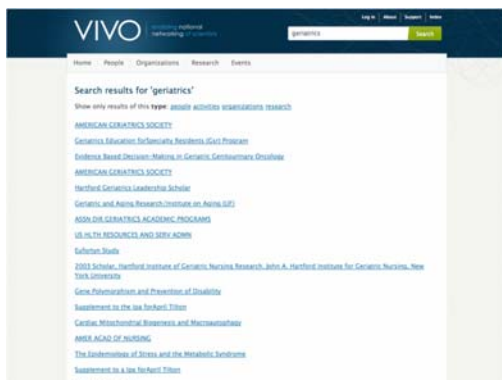
## VIVO: A Semantic Approach to Creating a National Network of Researchers (<http://vivoweb.org>)

- Semantic web application and ontology editor originally developed at Cornell U.
- Integrates research and scholarship info from systems of record across institution(s).
- Facilitates research discovery and cross-disciplinary collaboration.
- Simplify reporting tasks, e.g., generate biosketch, department report.



Funded by \$12 million NIH award.

**Cornell University:** Dean Krafft (Cornell PI), Manolo Bevia, Jim Blake, Nick Cappadona, Brian Caruso, Jon Corson-Rikert, Elly Cramer, Medha Devare, John Ferreira, Brian Lowe, Stella Mitchell, Holly Mistlebauer, Anup Sawant, Christopher Westling, Rebecca Younes. **University of Florida:** Mike Conlon (VIVO and UF PI), Cecilia Botero, Kerry Britt, Erin Brooks, Amy Buhler, Ellie Bushhousen, Chris Case, Valrie Davis, Nita Ferree, Chris Haines, Rae Jesano, Margeaux Johnson, Sara Kreinest, Yang Li, Paula Markes, Sara Russell Gonzalez, Alexander Rockwell, Nancy Schaefer, Michele R. Tennant, George Hack, Chris Barnes, Narayan Raam, Brenda Stevens, Alicia Turner, Stephen Williams. **Indiana University:** Katy Borner (IU PI), William Barnett, Shanshan Chen, Ying Ding, Russell Duhon, Jon Dunn, Micah Linnemeier, Nianli Ma, Robert McDonald, Barbara Ann O'Leary, Mark Ping, Yuyin Sun, Alan Walsh, Brian Wheeler, Angela Zoss. **Ponce School of Medicine:** Richard Noel (Ponce PI), Ricardo Espada, Damaris Torres. **The Scripps Research Institute:** Gerald Joyce (Scripps PI), Greg Dunlap, Catherine Dunn, Brant Kelley, Paula King, Angela Murrell, Barbara Noble, Cary Thomas, Michaelen Trimarchi. **Washington University, St. Louis:** Rakesh Nagarajan (WUSTL PI), Kristi L. Holmes, Sunita B. Koul, Leslie D. McIntosh. **Weill Cornell Medical College:** Curtis Cole (Weill PI), Paul Albert, Victor Brodsky, Adam Cheriff, Oscar Cruz, Dan Dickinson, Chris Huang, Itay Klaz, Peter Michelini, Grace Migliorisi, John Ruffing, Jason Specland, Tru Tran, Jesse Turner, Vinay Varughese.





**University of Florida**

How do you want to compare?  
by Grants

Who do you want to compare?  
Search: X

Records 1 - 10 of 30

Entity Label	Grant Count	Entity Type
<input checked="" type="checkbox"/> Continuing Education	562	UF Department, Agent, Non-Academic Department, Department
<input checked="" type="checkbox"/> Florida Museum of Natural History	203	Museum, Agent
<input checked="" type="checkbox"/> College of Agricultural and Life Sciences	166	Agent, UF College, College
<input checked="" type="checkbox"/> College of Engineering	103	Agent, UF College, College
<input checked="" type="checkbox"/> Evelyn F. and William L. McKnight Brain Institute of the University of Florida	64	UF Center, Agent, Center
<input checked="" type="checkbox"/> International Center	54	UF Department, Agent, Non-Academic Department, Department
<input checked="" type="checkbox"/> Florida Sea Grant	44	UF Center, Agent, Center
<input type="checkbox"/> Whitney Laboratory for Marine Bioscience	42	UF Research Laboratory, Agent, Laboratory, Research Laboratory
<input type="checkbox"/> Water Institute	38	UF Center, Agent, Center
<input type="checkbox"/> College of Dentistry	35	Agent, UF College, College

Save as CSV Clear

**Comparing Grants of Organizations in University of Florida**

**Total Number of Grants**  
You have selected 7 of a maximum 10 organizations to compare. Clear

- Florida Sea Grant 44
- International Center 54
- Evelyn F. and William L. McKnight Brain Institute of the University of Florida 64
- College of Engineering 103
- College of Agricultural and Life Sciences 166
- Florida Museum of Natural History 203
- Continuing Education 562

**Temporal Analysis (When)** Temporal visualizations of the number of papers/funding awarded at the institution, school, department, and people level

**VIVO** enabling national networking of scientists

Index Log in

Home People Organizations Research Events

**University of Florida**

Explore 487 publications activity across 554 scientific sub-disciplines

13 Disciplines | 554 Sub-Disciplines

Search: X

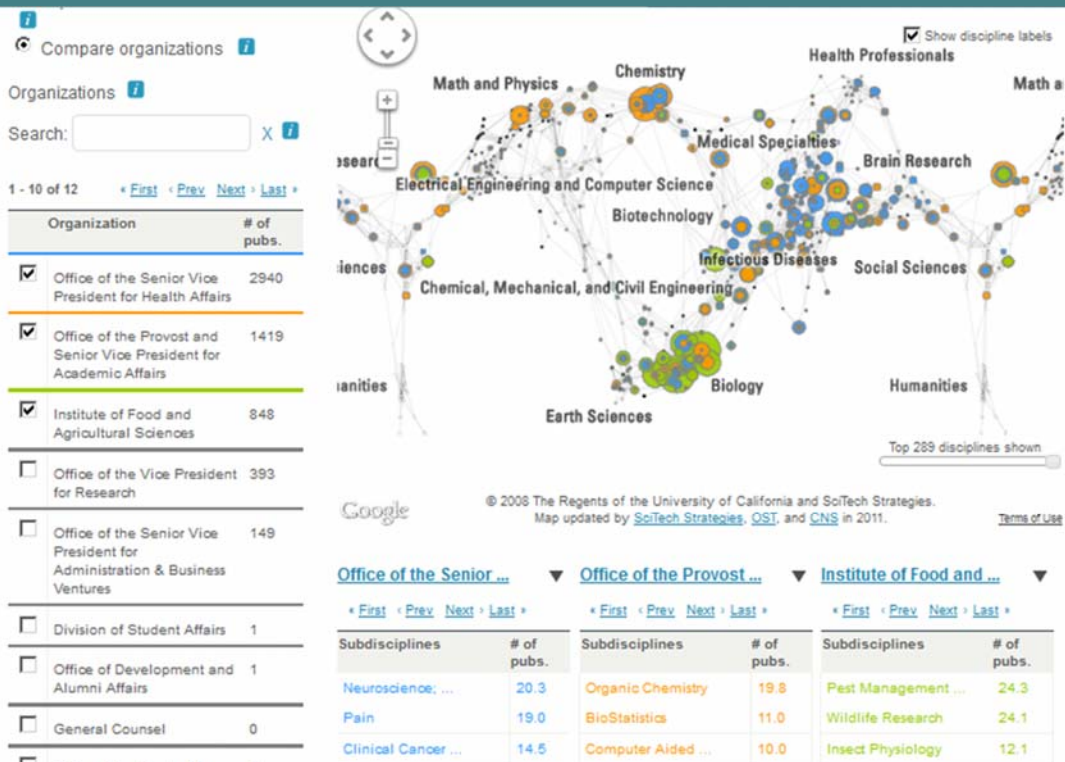
1 - 13 of 554

Sub-Disciplines	# of pubs.	% activity
Pest Management Science	24.2	5.0
Wildlife Research	19.1	3.9
Protein Science	13.1	2.7
Clinical Cancer Research	12.6	2.6
Pain	12.0	2.5
Environmental Contamination	11.2	2.3
Insect Physiology	11.1	2.3
Organic Chemistry	10.3	2.1
Marine Biology	10.3	2.1
Computer Aided Molecular Design	10.2	2.1
BioStatistics	9.0	1.9

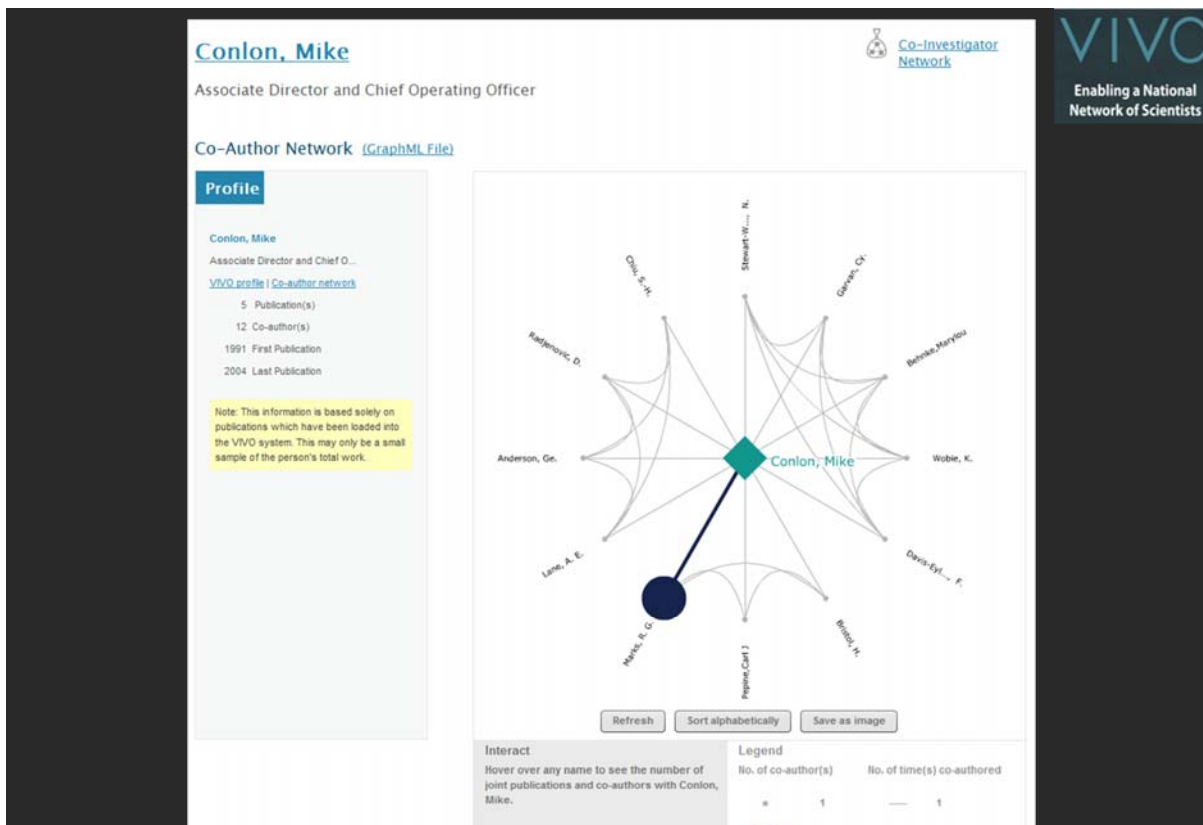
Top 290 disciplines shown

mapped 14.55% of 3,346 publications

**Topical Analysis (What)** Science map overlays will show where a person, department, or university publishes most in the world of science. (in work)



**Topical Analysis (What)** Science map overlays will show where a person, department, or university publishes most in the world of science. (in work)



**Network Analysis (With Whom?)** Who is co-authoring, co-investigating, co-inventing with whom? What teams are most productive in what projects?

## VIVO On-The-Go



Overview, Interactivity,  
Details on Demand  
come to  
commonly  
used devices  
and environments

### VIVO: A Semantic Approach to Scholarly Networking and Discovery

Katy Börner<sup>1</sup>, Michael Conlon<sup>2</sup>, Jon Corson-Rikert<sup>3</sup>, and Ying Ding<sup>1</sup>  
*Indiana University<sup>1</sup>, University of Florida<sup>2</sup>, and Cornell University<sup>3</sup>*

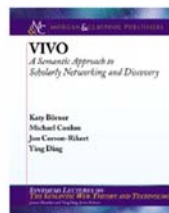
Series: *Synthesis Lectures on the Semantic Web: Theory and Technology*  
Series Editors: James Hendler, Rensselaer Polytechnic Institute  
Ying Ding, Indiana University

The world of scholarship is changing rapidly. Increasing demands on scholars, the growing size and complexity of questions and problems to be addressed, and advances in sophistication of data collection, analysis, and presentation require new approaches to scholarship. A ubiquitous, open information infrastructure for scholarship, consisting of linked open data, open-source software tools, and a community committed to sustainability are emerging to meet the needs of scholars today.

This book provides an introduction to VIVO, <http://vivoweb.org/>, a tool for representing information about research and researchers—their scholarly works, research interests, and organizational relationships. VIVO provides an expressive ontology, tools for managing the ontology, and a platform for using the ontology to create and manage linked open data for scholarship and discovery. Begun as a project at Cornell and further developed by an NIH funded consortium, VIVO is now being established as an open-source project with community participation from around the world. By the end of 2012, over twenty countries and fifty organizations will provide information in VIVO format on more than one million researchers and research staff, including publications, research resources, events, funding, courses taught, and other scholarly activity.

The rapid growth of VIVO and of VIVO-compatible data sources speaks to the fundamental need to transform scholarship for the twenty-first century.

<http://www.morganclaypool.com/toc/wbe.1/1/1>

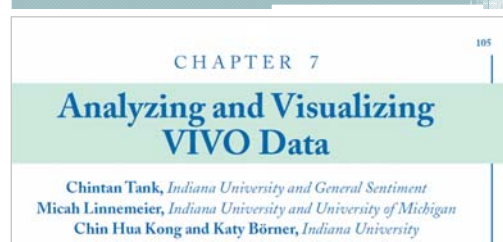


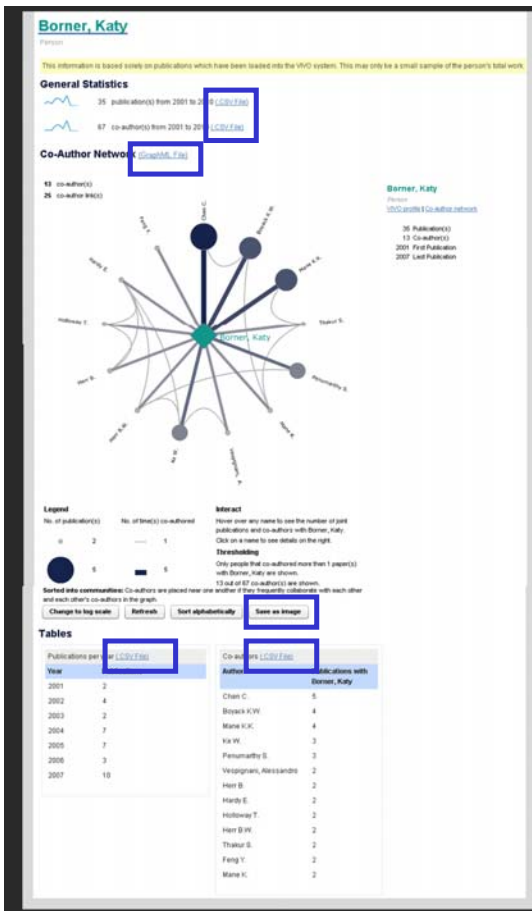
ISBN  
Paperback  
9781608459933  
eBook  
9781608459940

Publication Date  
July 12, 2012

List Price  
\$45.00 / £27.50

Pages  
250





## Download Data

### General Statistics

- 36 publication(s) from 2001 to 2010 [\(.CSV File\)](#)
- 80 co-author(s) from 2001 to 2010 [\(.CSV File\)](#)

### Co-Author Network

[\(GraphML File\)](#)

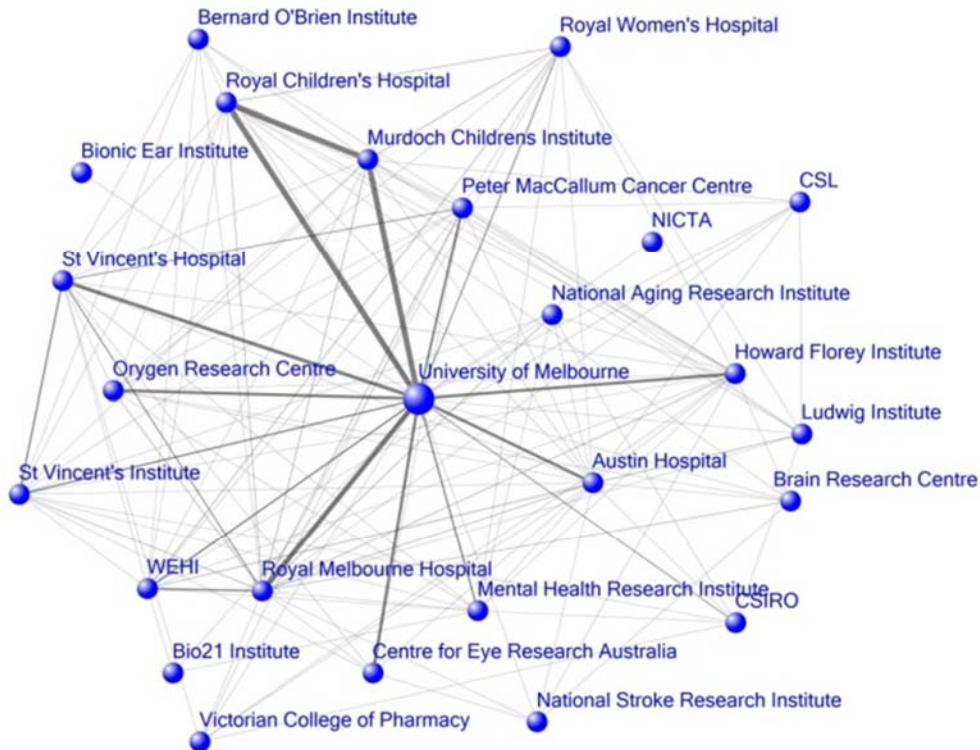
Save as Image (.PNG file)

### Tables

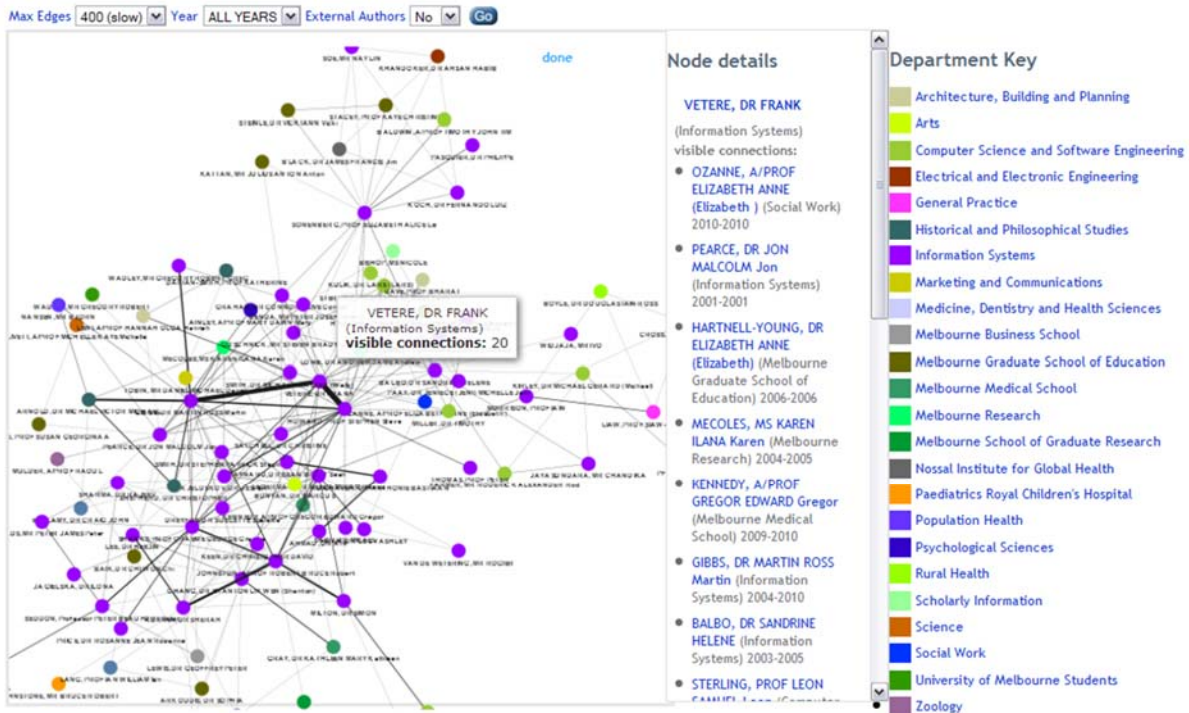
- Publications per year [\(.CSV File\)](#)
- Co-authors [\(.CSV File\)](#)

<http://vivo.iu.edu/vis/author-network/person25557>

39

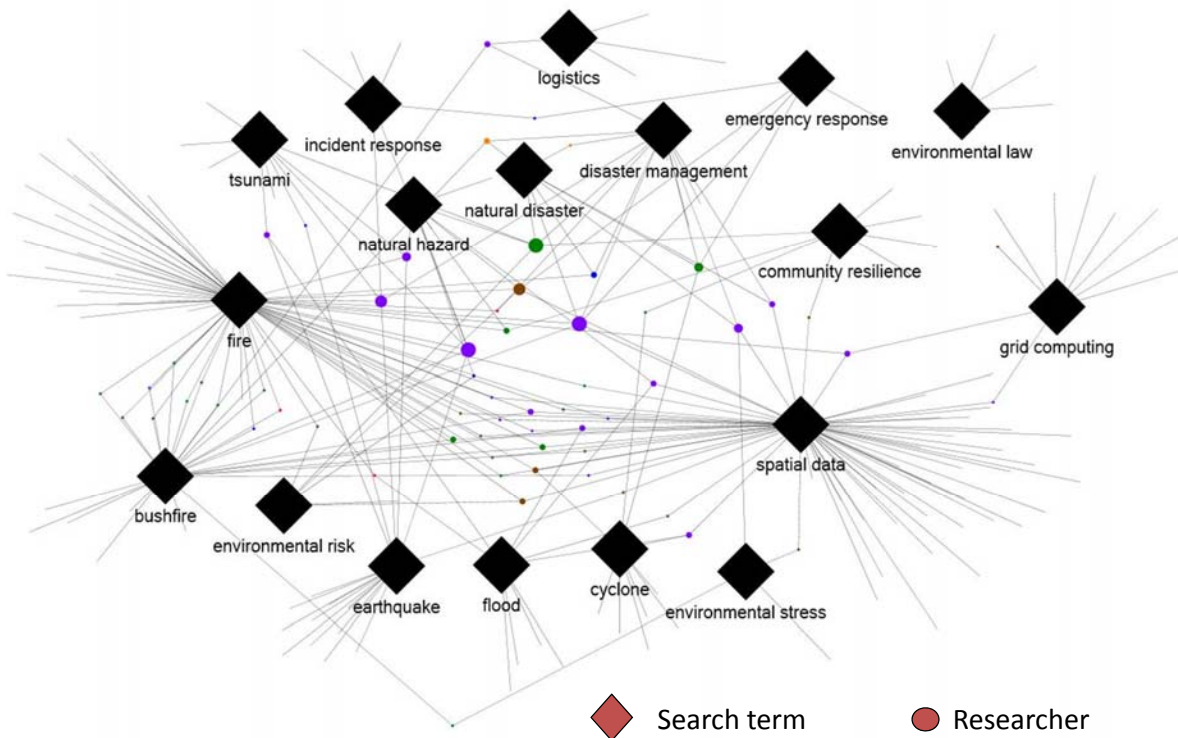


**2008 collaboration patterns for medical institutions located close to Melbourne University**  
Source: Web of Science co authorship information. Compiled by Simon Porter



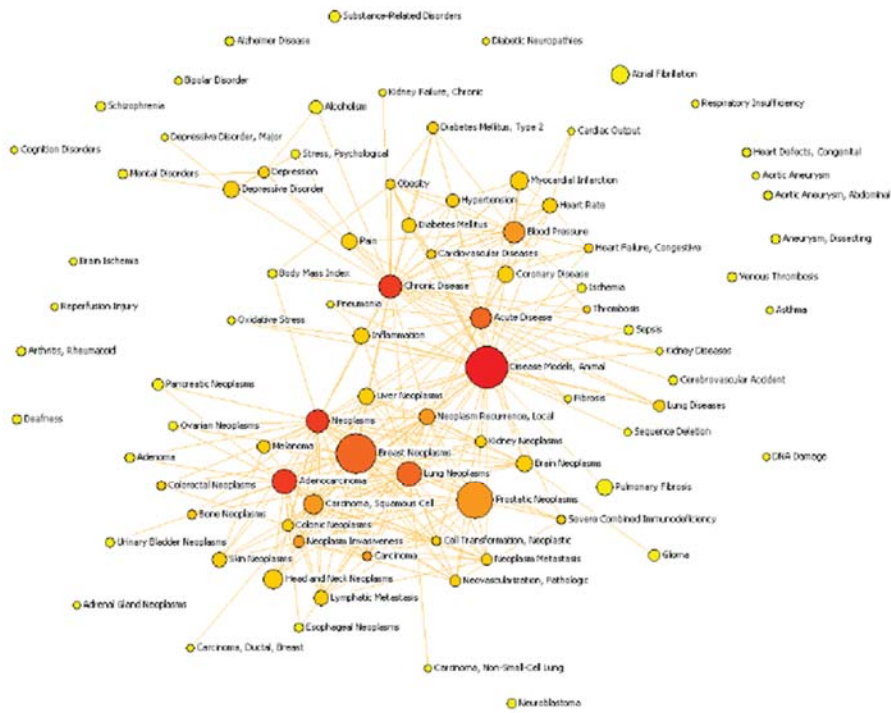
**Co-authorship network for the department of Information Systems**

Source: Melbourne Research Windows. Contact Simon Porter [simon.porter@unimelb.edu.au](mailto:simon.porter@unimelb.edu.au)



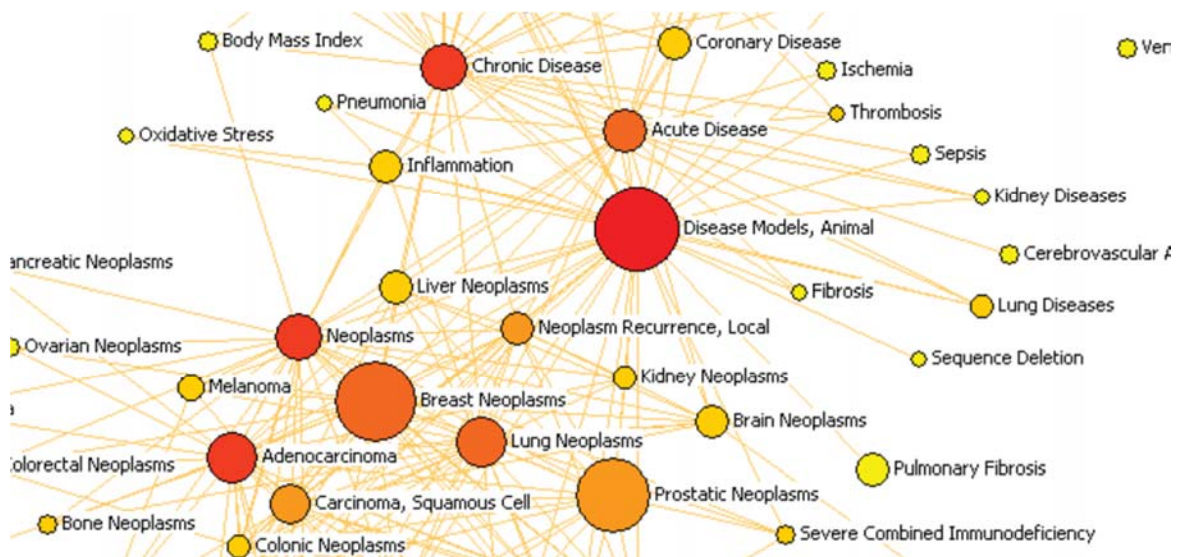
Bimodal network of search terms and researchers extracted from research profile search results to show the **University's capability in Disaster Management** to the Government

Contact: [simon.porter@unimelb.edu.au](mailto:simon.porter@unimelb.edu.au)



**Top MeSH Disease Concepts Appearing in PubMed Publications by the University of Michigan Medical School.** Links connect concepts where 100+ authors published about both concepts within the span of their careers.

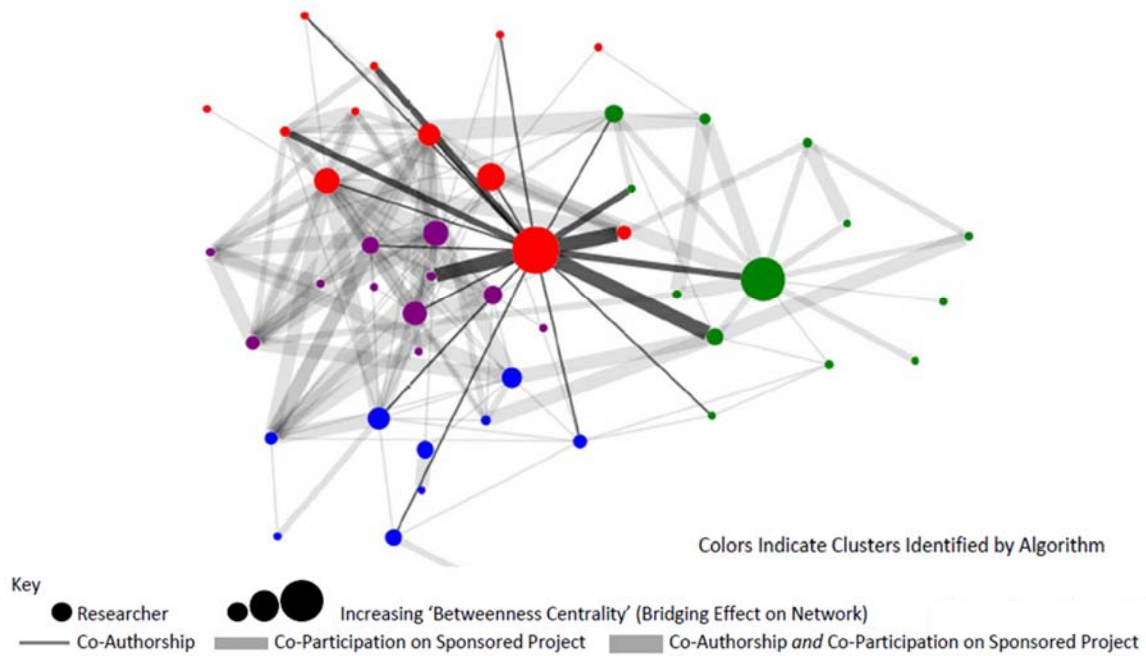
Contact: Jeffrey Horon, [J.Horon@elsevier.com](mailto:J.Horon@elsevier.com)



**Top MeSH Disease Concepts Appearing in PubMed Publications by the University of Michigan Medical School.** Links connect concepts where 100+ authors published about both concepts within the span of their careers.

This visualization revealed that animal disease models were central to disease research at U-M which encouraged additional thought and attention to animal husbandry, animal expenses, and core/shared services overall.

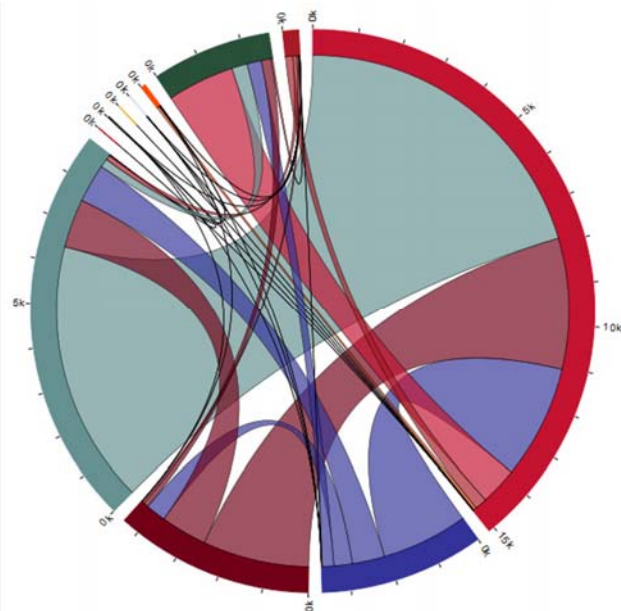
Contact: Jeffrey Horon, [J.Horon@elsevier.com](mailto:J.Horon@elsevier.com)



**P30 Member Collaborations – Sponsored Project Co-Participation and Co-Authorship Network.** Used in **successful!** P30 funding application. Shows the PI's relationships with various P30 members, conveying that the PI was not only the formal center of the group but also the informal center and the person who exhibited the highest betweenness centrality. Contact: Jeffrey Horon, [J.Horon@elsevier.com](mailto:J.Horon@elsevier.com)

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Institutions	
<input checked="" type="checkbox"/> <a href="#">Harvard Med School</a>	(15124)
<input checked="" type="checkbox"/> <a href="#">Northwestern Med School</a>	(3630)
<input checked="" type="checkbox"/> <a href="#">U. of Minnesota</a>	(4388)
<input checked="" type="checkbox"/> <a href="#">U. California at San Fran</a>	(8874)
<input checked="" type="checkbox"/> <a href="#">Cornell</a>	(1)
<input checked="" type="checkbox"/> <a href="#">Cornell Medical</a>	(32)
<input checked="" type="checkbox"/> <a href="#">Ponce School of Med</a>	(3)
<input checked="" type="checkbox"/> <a href="#">Scripps Research Institute</a>	(22)
<input checked="" type="checkbox"/> <a href="#">Univ. of Florida</a>	(100)
<input checked="" type="checkbox"/> <a href="#">Washington U at St. Louis</a>	(2635)
<input checked="" type="checkbox"/> <a href="#">Mendeley</a>	(352)



### Inter-Institutional Collaboration Explorer

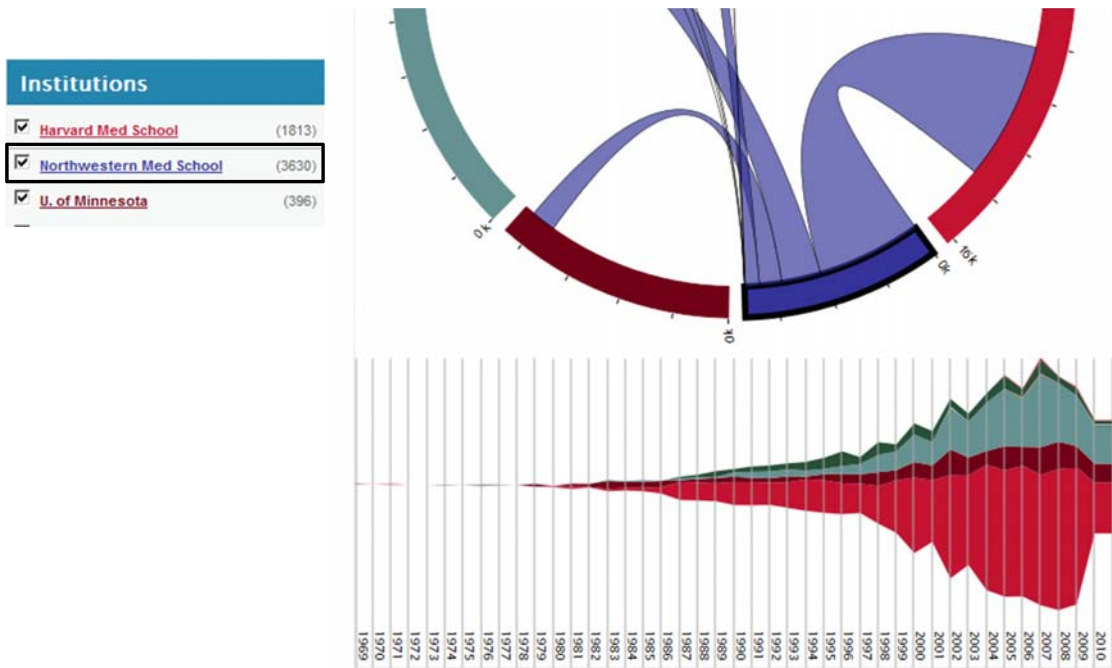
This visualization shows information about “collaborative publications” found at 2 or more Researcher Networking websites.

The idea that institutions don't work together and that biomedical research is conducted in silos is not true. Researchers, even when separated by great distances, are in fact willing to work together, and this visualization demonstrates that they often do.

Contact: Nick Benik ([nbenik@gmail.com](mailto:nbenik@gmail.com)), Harvard Medical School, Boston, MA.

URL: <http://xcite.hackerceo.org/VIVOviz>

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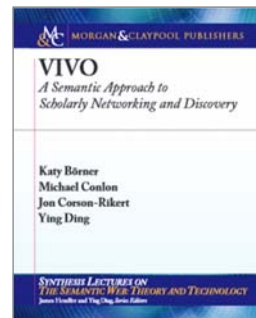
### Inter-Institutional Collaboration Explorer

The outer solid colored arcs represent the 11 institutions. The size of the arc is proportional to the number of collaborative publications found on the site. The inner colored bands represent the number of collaborative publications found between the two institutions that each band connects. Clicking an institution's arc will hide any bands not connected to that institution and will display a timeline of when that institution's collaborative publications were written.

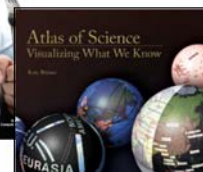
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## Overview

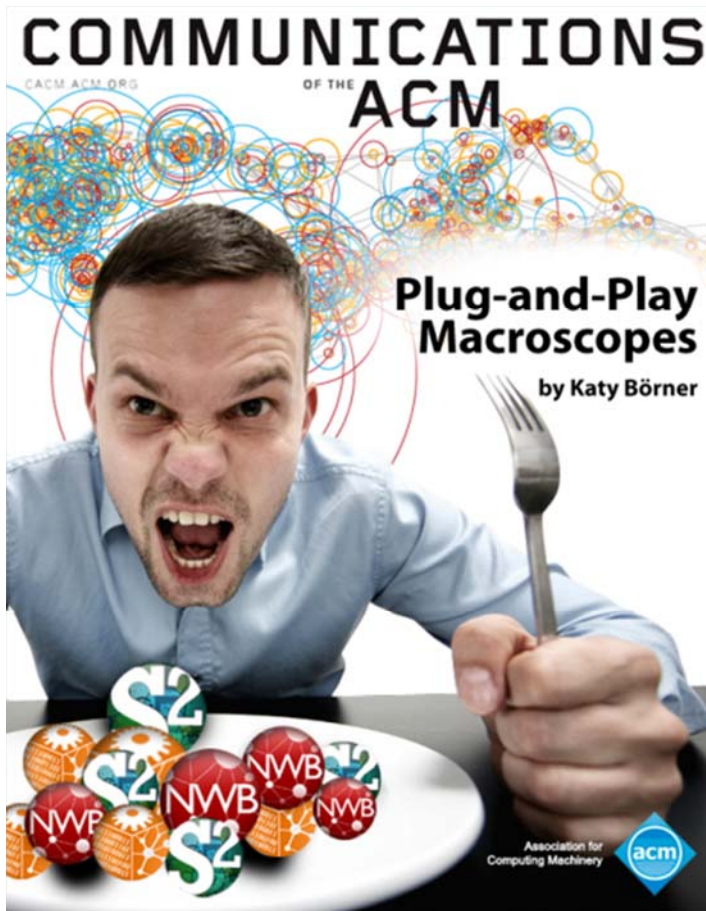
1. **Research Networking Services** that aim to support collaborations, research management, and the flow of knowledge/expertise.
2. **VIVO Approach and Visualizations** that help answer When, Where, What, With Whom questions.
3. **Outlook** how to scale and commoditize data mining and visualizations of research networking data.



COMMUNICATIONS  
ACM







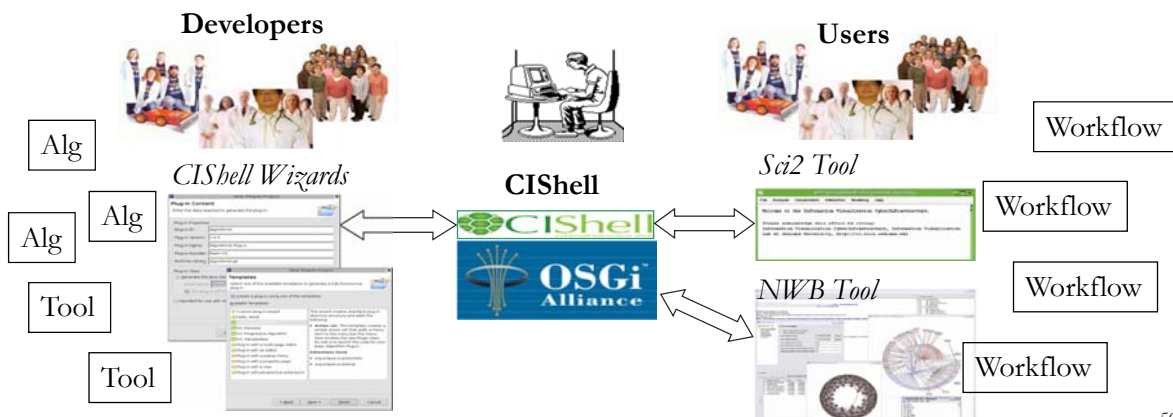
Börner, Katy. (March 2011). Plug-and-Play Macroscopes. *Communications of the ACM*, 54(3), 60-69.

Video and paper are at <http://www.scivee.tv/node/27704>



## OSGi & CIShell

- CIShell (<http://cishell.org>) is an open source software specification for the integration and utilization of datasets, algorithms, and tools.
- It extends the Open Services Gateway Initiative (OSGi) (<http://osgi.org>), a standardized, component oriented, computing environment for networked services widely used in industry since more than 10 years.
- Specifically, CIShell provides “sockets” into which existing and new datasets, algorithms, and tools can be plugged using a wizard-driven process.



# Design and Update of a Classification System: The UCSD Map of Science

Nov. 04-05, 2013 **Science Mapping Standards Workshop** at Indiana University will bring together leading researchers and data providers to

- Update UCSD science map—adding recent publication data by Scopus and Web of Science as well as **Chinese data** and data from **SciELO**.
- Discuss scientifically sound standards for aligning existing science maps to each other and to major classification systems.

Börner, Katy, Richard Klavans, Michael Patek, Angela Zoss, Joseph R. Biberstine, Robert Light, Vincent Larivière, and Kevin W. Boyack. 2012. [“Design and Update of a Classification System: The UCSD Map of Science.”](#) *PLoS One* 7 (7): e39464.

OPEN ACCESS Freely available online PLoS ONE

## Design and Update of a Classification System: The UCSD Map of Science

Katy Börner<sup>1,2\*</sup>, Richard Klavans<sup>3</sup>, Michael Patek<sup>4</sup>, Angela M. Zoss<sup>1</sup>, Joseph R. Biberstine<sup>1</sup>, Robert P. Light<sup>1</sup>, Vincent Larivière<sup>4,5</sup>, Kevin W. Boyack<sup>6</sup>

1 Cyberinfrastructure for Network Science Center, School of Library and Information Science, Indiana University, Bloomington, Indiana, United States of America, 2 Royal Netherlands Academy of Arts and Sciences (KNAW), Amsterdam, The Netherlands, 3 Leitch Streeper, Inc., Beverly, Pennsylvania, United States of America, 4 Ecole de Bibliothécaire et des Sciences de l'Information, Université de Montréal, Montréal, Canada, 5 Université de la Science et de Technologie (UST), Centre Interdisciplinaire de Recherche sur la Science et la Technologie (CRIST), Université du Québec à Montréal, Montréal, Canada, 6 Leitch Streeper, Inc., Albuquerque, New Mexico, United States of America

**Abstract**  
Global maps of science can be used as a reference system to chart career trajectories, the location of emerging research frontiers, or the expertise profiles of institutes or nations. This paper details data preparation, analysis, and layout performed when designing and subsequently updating the UCSD map of science and classification system. The original classification and map use 7.2 million papers and their references from Elsevier's Scopus (about 15,000 source titles, 2001–2005) and Thomson Reuters' Web of Science (WoS) Science, Social Science, Arts & Humanities Citation Indexes (about 9,000 source titles, 2001–2004) about 16,000 unique source titles. The updated map and classification adds six years (2005–2010) of WoS data and three years (2006–2008) from Scopus to the existing category structure—increasing the number of source titles to about 25,000. To our knowledge, this is the first time that a widely used map of science was updated. A comparison of the original 5-year and the new 10-year maps and classification system show (i) an increase in the total number of journals that can be mapped by 6,800 journals (social sciences had a 80% increase, humanities a 119% increase, medical (20%) and natural science (74%)), (ii) a simplification of the map by assigning all but five highly interdisciplinary journals to exactly one discipline, (iii) a more even distribution of journals over the 554 subdisciplines and 13 disciplines when calculating the coefficient of variation, and (iv) a better reflection of journal clusters when compared with paper-level citation data. When evaluating the map with a listing of desirable features for maps of science, the updated map is shown to have higher mapping accuracy, easier understandability as fewer journals are multiply classified, and higher usability for the generation of data overlays, among other things.

**Introduction**  
Cartographic maps of global exploration for centuries. These maps are used to researchers, to show flows of information, to serve today's explorers and map-makers. A scientific analysis of large-scale scholarly datasets in an effort to extract, connect, and make sense of the bits and pieces of knowledge they contain [1,2]. Science maps can be used to gain overviews of “all-science” or of a specific subdiscipline. Science maps in combination with a mapping process for new datasets can be used to visually depict and compare data over time, e.g., of funding vs. publication data [3]. Science maps can help identify major research areas, experts, institutions, collections, grants, papers, journals, and ideas in a visualization of science mapping efforts has increased enormously since the rise of the availability of scholarly data in digital format, algorithm development, and an increase in computing power, see Mapping Science exhibit maps (<http://scmap.org>). Each science map depicts an abstract high-dimensional space using different datasets, reference systems, and graphic designs. Very few maps depict all major disciplines of scholarly activity—there are also called global maps of science [5]. Some of these maps are drawn by hand while others are computer generated. Some depict the

PLoS ONE | www.plosone.org July 2012 | Volume 7 | Issue 7 | e39464

## Information Visualization MOOC

INDIANA UNIVERSITY CNS

### Overview

This course provides an overview about the state of the art in information visualization. It teaches the process of producing effective visualizations that take the needs of users into account.

Among other topics, the course covers:

- Data analysis algorithms that enable extraction of relationships in data
- Major visualization and interaction techniques
- Discussions of systems that drive research and development.

A certificate will be issued upon successful completion. Please watch the introduction video to get better acquainted with the course.

Katy Börner, Ph.D.  
Indiana University

COMMUNICATIONS OF THE ACM

Plug-and-Play Macroscopes

Share More info

Plug-and-Play Macroscopes of the ACM

URL: <http://www.youtube.com/watch?v=mode/27704>

[Sign Up For The Course](#)

Register for free at <http://ivmooc.cns.iu.edu>. Class restarts on Jan 28, 2014.

## References

Börner, Katy, Chen, Chaomei, and Boyack, Kevin. (2003). **Visualizing Knowledge Domains**. In Blaise Cronin (Ed.), *ARIST*, Medford, NJ: Information Today, Volume 37, Chapter 5, pp. 179-255. <http://ivl.slis.indiana.edu/km/pub/2003-borner-arist.pdf>

Shiffrin, Richard M. and Börner, Katy (Eds.) (2004). **Mapping Knowledge Domains**. *Proceedings of the National Academy of Sciences of the United States of America*, 101(Suppl\_1). [http://www.pnas.org/content/vol101/suppl\\_1/](http://www.pnas.org/content/vol101/suppl_1/)

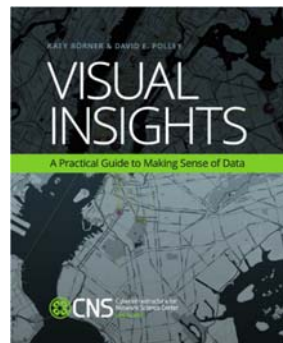
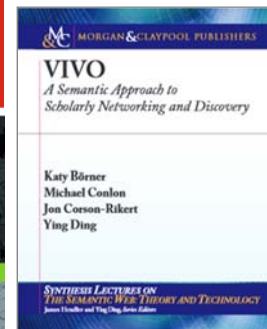
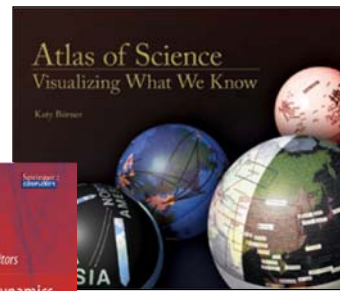
Börner, Katy, Sanyal, Soma and Vespignani, Alessandro (2007). **Network Science**. In Blaise Cronin (Ed.), *ARIST*, Information Today, Inc., Volume 41, Chapter 12, pp. 537-607. <http://ivl.slis.indiana.edu/km/pub/2007-borner-arist.pdf>

Börner, Katy (2010) **Atlas of Science**. MIT Press. <http://scimaps.org/atlas>

Scharnhorst, Andrea, Börner, Katy, van den Besselaar, Peter (2012) **Models of Science Dynamics**. Springer Verlag.

Katy Börner, Michael Conlon, Jon Corson-Rikert, Cornell, Ying Ding (2012) **VIVO: A Semantic Approach to Scholarly Networking and Discovery**. Morgan & Claypool.

Katy Börner and David E Polley (2014) **Visual Insights: A Practical Guide to Making Sense of Data**. MIT Press.



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The screenshot shows the CNS website with the following content:

- Navigation:** About Us, Research, Development, Teaching, Outreach, Videos, News & Events, Connect With Us.
- Main Banner:** "We work closely with clients to provide custom-made data, visualization, and software solutions" with a photo of a meeting.
- Research:** Open Data and Open Code for Big Science of Science Studies.
- Latest News:** Put your money where your citations are: a proposal for a new funding system (website accessed 9/05/13).
- Upcoming Events:**
  - OCT 1: Katy Börner attends PIUG 2013 Northeast Conference
  - 10.13: Katy Börner presents Mapping Science Exhibit at WSSF
  - 10.15: Ted Polley & Google Team present IVMOOC at EDUCAUSE
  - 10.22: Katy Börner presents at the SciELO 15 Years Conference
- Development:** Behind the scenes of the design and development of AcademyScope.
- Outreach:** See some of the most fascinating data visualizations in the world.
- Videos:** Watch Katy Börner's full presentation from TEDxBloomington.
- Teaching:** Successful IVMOOC will be offered again in January of 2014.
- Our Products:** We work closely with clients to provide custom-made data visualization, and software solutions.

All papers, maps, tools, talks, press are linked from <http://cns.iu.edu>

CNS Facebook: <http://www.facebook.com/cnscenter>

Mapping Science Exhibit Facebook: <http://www.facebook.com/mappingscience>

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