

OPENING UP SCIENCE WITH VIVO

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@vivocollab



Let's talk about the data...

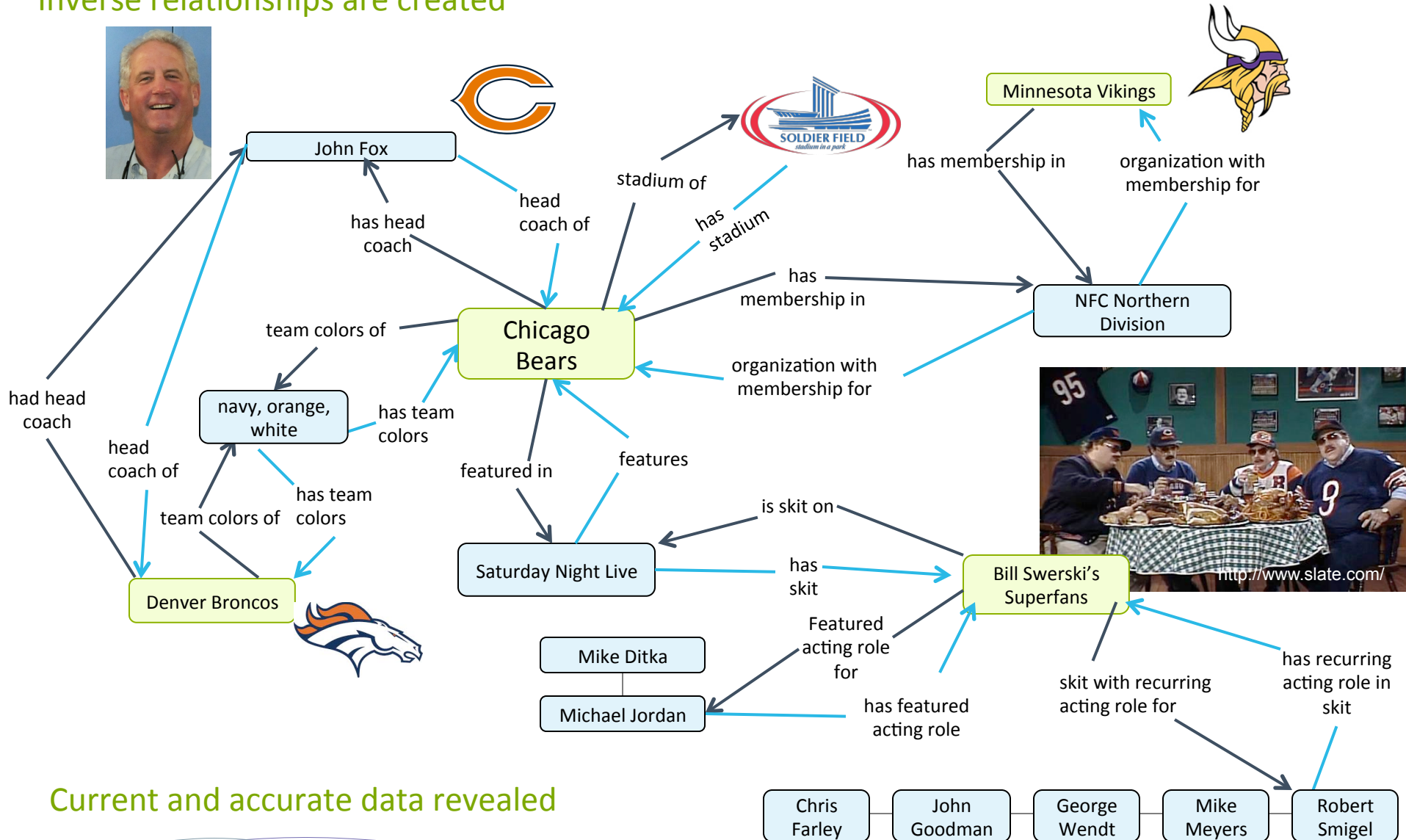
The Semantic Web isn't just about putting data on the web. It is about making links, so that a person or machine can explore the web of data. With linked data, when you have some of it, you can find other related data.



Detailed Data Relationships

Inverse relationships are created

Connections among concepts illustrated



Current and accurate data revealed

Let's think about why this is important on the institutional level...



Current challenges

Faculty

- *Research is increasingly more interdisciplinary*
 - How can you find collaborators, track competitors, and stay abreast of current research inside large institutions, at other institutions, and globally?
 - How can you find others with shared interests or expertise?
 - How can you build diverse teams? Find mentors? Be identified as a partner by community groups?

Support: facilities and personnel

- Library administration or directors of core facilities want to align their strategic plan with the evolving research needs of their clientele.
- Identifying growth areas of research through increasing publications, focused areas of research and grant dollars enables this task to become more evidence-based.

Administrators

- *Research institutions can be extremely large and diverse*
 - How can administrators showcase and monitor research activity, track competitors, and stay abreast of current research inside large institutions, at other institutions, and globally?
 - How can you enhance visibility and present a unified picture of an institution?

Research Networking

Information about scholars is optimized using a Web-based infrastructure of standards and technologies which allows for a distributable, machine readable description of data that allows for stronger data and smart web application linkages across many universities, agencies, societies both within the US and abroad.

Why is this important?

Linked data infrastructure allows for

- Visualizations, research and clinical data integration, and deep semantic searching across multiple types and sources of data
- By breaking data out of traditional database silos, research networking platforms promote a network effect within a single site and across multiple sites
 - The value of the network increases with the amount of linked data and applications that are available to consume the linked data.

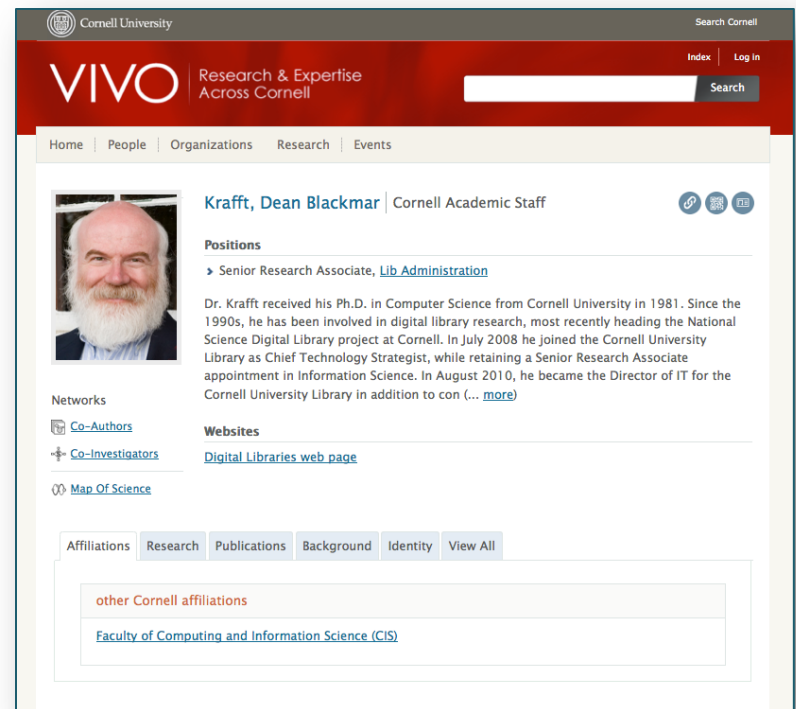


What is VIVO?

1. An open source semantic web application
2. An information model
3. An open community

VIVO

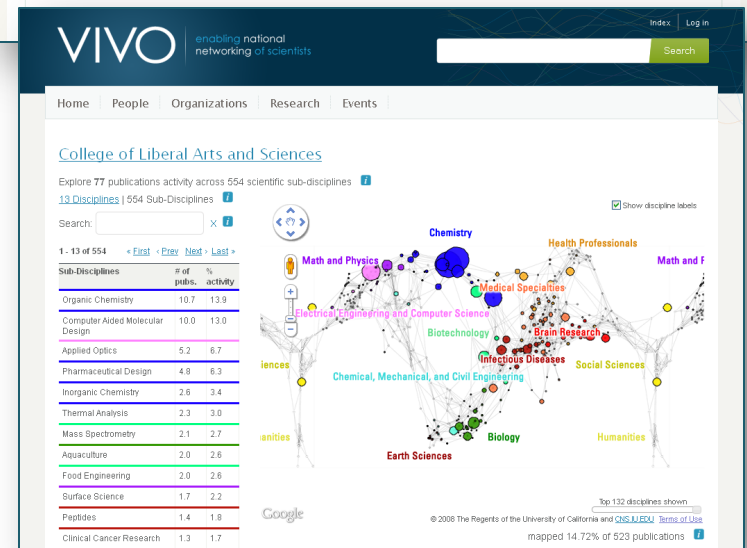
connect • share • discover



What is VIVO?

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The screenshot shows the VIVO profile page for Dean Blackmar Krafft. The header includes the Cornell University logo and the VIVO logo with the tagline "Research & Expertise Across Cornell". Navigation links for Home, People, Organizations, Research, and Events are present. The profile section features a photo of Dr. Krafft, his name, and affiliation with Cornell Academic Staff. It lists his positions, including Senior Research Associate and Lib Administration, and provides a brief biography. Below this, there are sections for Networks (Co-Authors, Co-Investigators, Map Of Science) and Websites (Digital Libraries web page). A tabbed interface at the bottom allows viewing Affiliations, Research, Publications, Background, Identity, and View All. The Affiliations tab is active, showing "other Cornell affiliations" and "Faculty of Computing and Information Science (CIS)".



VIVO

An open-source semantic web application that enables the discovery of research and scholarship across disciplines in an institution.

VIVO harvests data from verified sources and offers detailed profiles of faculty and researchers.

Public, structured linked data about investigators interests, activities and accomplishments, and tools to use that data to advance science.

VIVO enjoys a robust open community space to support implementation, adoption, & development efforts around the world.

See <http://wiki.duraspace.org/display/VIVO>



<http://vivoweb.org>



<http://twitter.com/VIVOcollab>



<http://www.facebook.com/VIVOcollaboration>

The screenshot displays the VIVO website interface. At the top, the VIVO logo is accompanied by the tagline "enabling national networking of scientists". A navigation bar includes links for Home, People, Organizations, Research, Events, Index, and Help. A search bar is located in the top right corner. The main content area features a profile for Michael Conlon, Associate Director and Chief Operating Officer. To the left of the profile is a photo of Michael Conlon. Below the photo are links for RDF, email (mconlon@ufl.edu), and phone number (3522738872). The profile lists various positions held by Michael Conlon, including roles at the University of Florida, the University of Florida Academic Health Center, and the College of Liberal Arts and Sciences. On the right side of the profile, there is a section titled "Publications in VIVO" showing a line graph and a count of 36 publications in the last 10 full years (141 total). Below this are links for Co-Author Network, Map Of Science, and Co-Investigator Network. At the bottom of the profile, a paragraph describes Dr. Conlon's role and responsibilities.

VIVO enabling national networking of scientists

Home People Organizations Research Events Index Help

Conlon, Michael | Associate Director and Chief Operating Officer

Positions

- Biomedical Informatics, Director 2010 -
- Clinical and Translational Science Institute, Faculty 2010 -
- Clinical and Translational Science Institute, Associate Director and Chief Operating Officer 2010 -
- Health Outcomes Policy, Faculty 2008 -
- Health Outcomes Policy, Research Associate Professor 1992 -
- Health Outcomes Policy, Interim Division Chief, Biomedical Informatics 2009 - 2010
- Clinical and Translational Science Institute, Associate Director 2009 - 2010
- Information Technology, Associate CIO, IT Architecture 2008 - 2010
- Information Technology, Director of Data Infrastructure 2002 - 2010
- MarCon Global Data Solutions, Chief Technical Officer 1997 - 2002
- University of Florida Academic Health Center, Chief Information Officer 1997 - 2002
- College of Liberal Arts and Sciences, Director, Information Resources and Technological Programs 1993 - 1997
- Statistics (CLAS), Research Assistant Professor 1983 - 1992
- Center for Instructional Research and Computing Activities, Assistant Director, Academic Computing 1982 - 1983
- Center for Instructional Research and Computing Activities, Director, Statistical Consulting Center 1980 - 1983

Publications in VIVO

36 in the last 10 full years (141 total)

Co-Author Network

Map Of Science

Co-Investigator Network

Dr. Conlon is Associate Director and Chief Operating Officer of the University of Florida Clinical and Translational Science Institute, Director of Biomedical Informatics, UF College of Medicine, and Principal Investigator of the NIH project "VIVO: Enabling National Networking of Scientists." His responsibilities include development of academic biomedical informatics, expansion and integration of research and clinical information resources and strategic planning for academic health and un (... [more](#))



A VIVO profile allows you to:

The screenshot displays a VIVO profile for Michael Conlon. The header includes the VIVO logo and navigation links. The profile section shows a photo, name, and title: Associate Director and Chief Operating Officer. Below this, a 'Positions' section lists various roles and dates, such as Biomedical Informatics Director (2010-) and Clinical and Translational Science Institute Associate Director (2010-). A 'Research Areas' section lists topics like Biomedical Informatics, Clinical Research Informatics, and Electronic Data Capture. An 'Affiliation' section shows the preferred title and current affiliation. A 'member of' section lists various committees and organizations, including the Research Computing Advisory Committee and the Clinical Trial Compliance Oversight Committee.

Discover potential colleagues or campus resources by work area, authorship, & collaborations.

Showcase credentials, expertise, skills, and professional achievements for individuals and campus groups.

Connect within focus areas and geographic expertise.

Simplify reporting tasks and link data to external applications – e.g., to generate biosketches or CV or for reporting purposes.

Publish the URL or link the profile to other applications.

Display visualizations of expertise areas or complex collaboration networks and relationships.

[Home](#)[People](#)[Organizations](#)[Research](#)[Events](#)

University of Florida

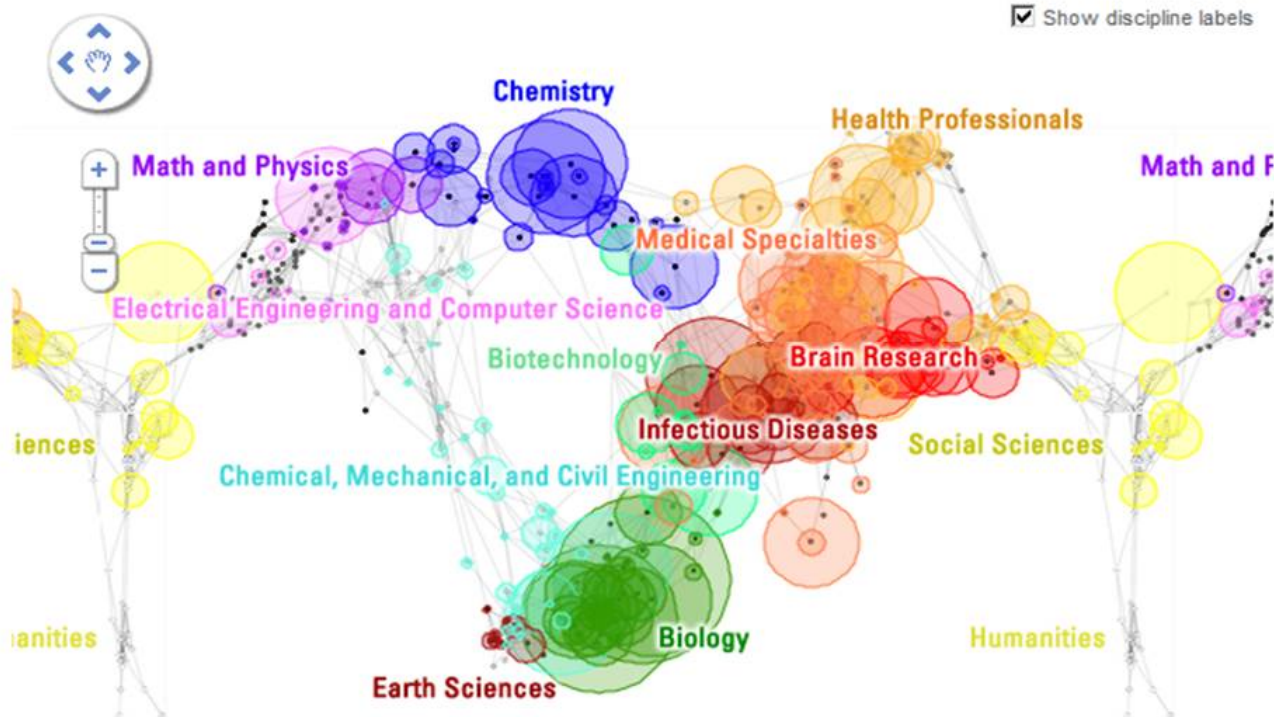
Explore **487** publications activity across 554 scientific sub-disciplines 

[13 Disciplines](#) | 554 Sub-Disciplines 

Search: X

1 - 13 of 554 [« First](#) [« Prev](#) [Next »](#) [Last »](#)

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
Brain Research	12.0	2.5



☒ Show discipline labels

Google

Top 290 disciplines shown

[Terms of Use](#)

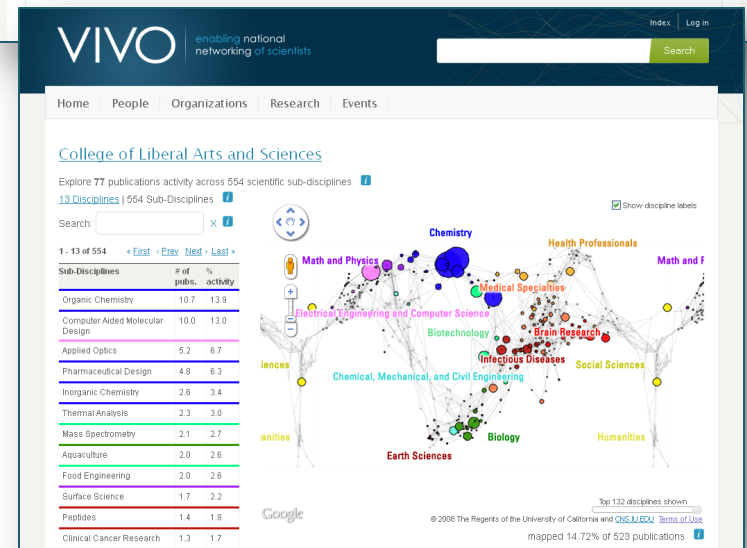
mapped 14.55% of 3,346 publications 



What is VIVO?

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The screenshot shows the VIVO profile page for Dean Blackmar Krafft, a Cornell Academic Staff member. The page includes a header with the Cornell University logo and VIVO branding. The main content area features a profile picture of Dean Krafft, his name, and his position as Senior Research Associate in Lib Administration. A detailed biography follows, mentioning his Ph.D. in Computer Science from Cornell in 1981 and his various roles in digital library research and IT at Cornell University Library. Below the biography, there are sections for Networks (Co-Authors, Co-Investigators, Map Of Science), Websites (Digital Libraries web page), and Affiliations (Faculty of Computing and Information Science (CIS)).



CTSA: Recommendations and Best Practices for Research Networking

The Research Networking Recommendations were approved by the CTSA Consortium Executive and Steering Committee on October 25, 2011.

Recommendations for Research Networking:

- **Recommendation:** All CTSA's should encourage their institution(s) to implement research networking tool(s) institution-wide that utilize **RDF triples** and an **ontology** compatible with the **VIVO ontology**.
- **Recommendation:** Information in people profiles at institutions should be publicly available as data as a general principle, specifically as **Linked Open Data**. To ensure quality of information, **authoritative electronic data sources versus manual entry** should be emphasized. Institutions will vary in the amount of information that they will include and make publicly available but the value is enhanced by the quality and quantity of information.
- **Recommendation:** Monitoring of the research networking landscape, technology, and tools should continue to be overseen by experts from the CTSA consortium (e.g., the **Research Networking group** of the **Informatics KFC**).

Building a large web of data, greater than any one effort



Data Creators, Data
Aggregators, & Data
Consumers

Repositories. Tools.
Applications. Workflows

A couple of local examples...



Brown University

VIVO connect • share • discover

Index | Log in

Home | People | Organizations | Research | Events

Nguyen, Toan | Assistant Professor of Applied Mathematics

Positions

- Prager Assistant Professor, [Division of Applied Mathematics, Brown University](#) 2010 -
- Research Postdoctoral Fellow of Fondation Sciences Mathématiques de Paris, [Institut de mathématiques de Jussieu, Université Pierre et Marie Curie – Paris VI](#) 2009 – 2010
- Associate Instructor and Research Assistant, [Department of Mathematics, Indiana University](#) 2006 – 2009

Publications in VIVO

14 in the last 10 full years

[Co-Author Network](#)

[Map Of Science](#)

[Co-Investigator Network](#)

[Publications](#) | [Research](#) | [Service](#) | [Background](#) | [Contact](#)

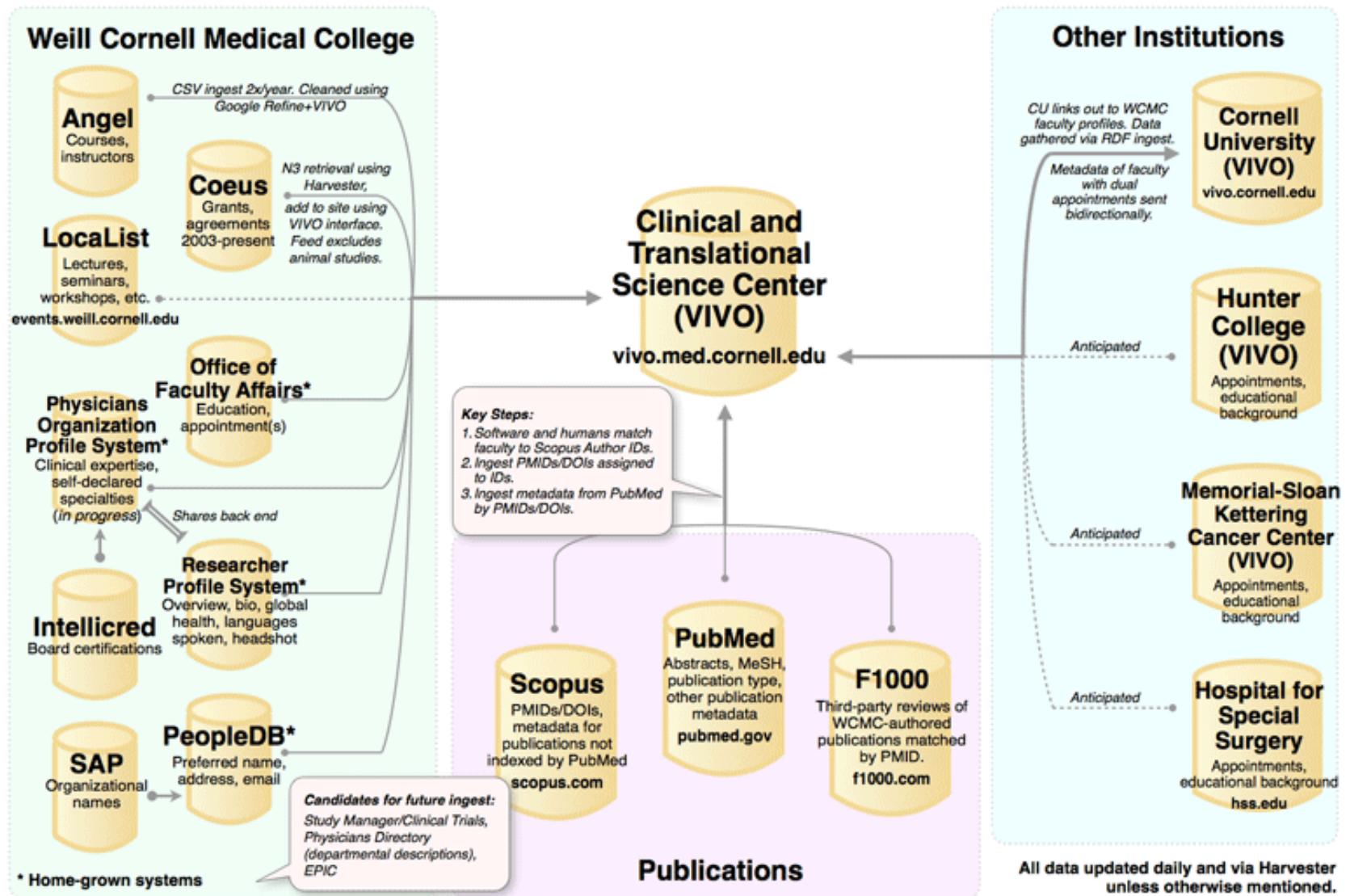
Publications

searchlight.jpeg | banner-conference-....jpeg | Show All

Weill Cornell Medical College

- PLATFORM: VIVO
- DATA: a variety of sources, applied and leveraged in various ways...

WCMC CTSC's VIVO data sources



VIVO Dashboard

A Drupal-based tool for visualizing semantic data

Publications

Post-M.D. Appointments

Request Analysis

All

Most Cited

By Person

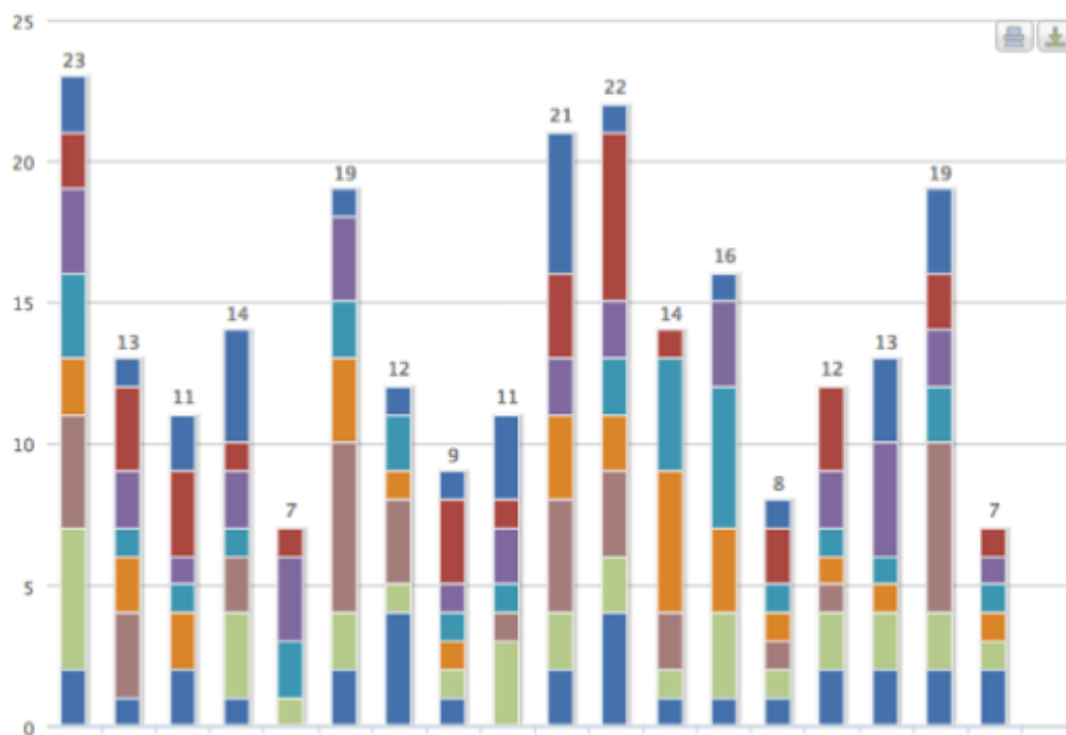
By Organization

PubMed Central Deposits

Publications

Graph

List



VIVO Dashboard

On demand publication
reporting and more

Read more: goo.gl/snG20

Filter Results

Year

1995 - 2013

☐ By Month

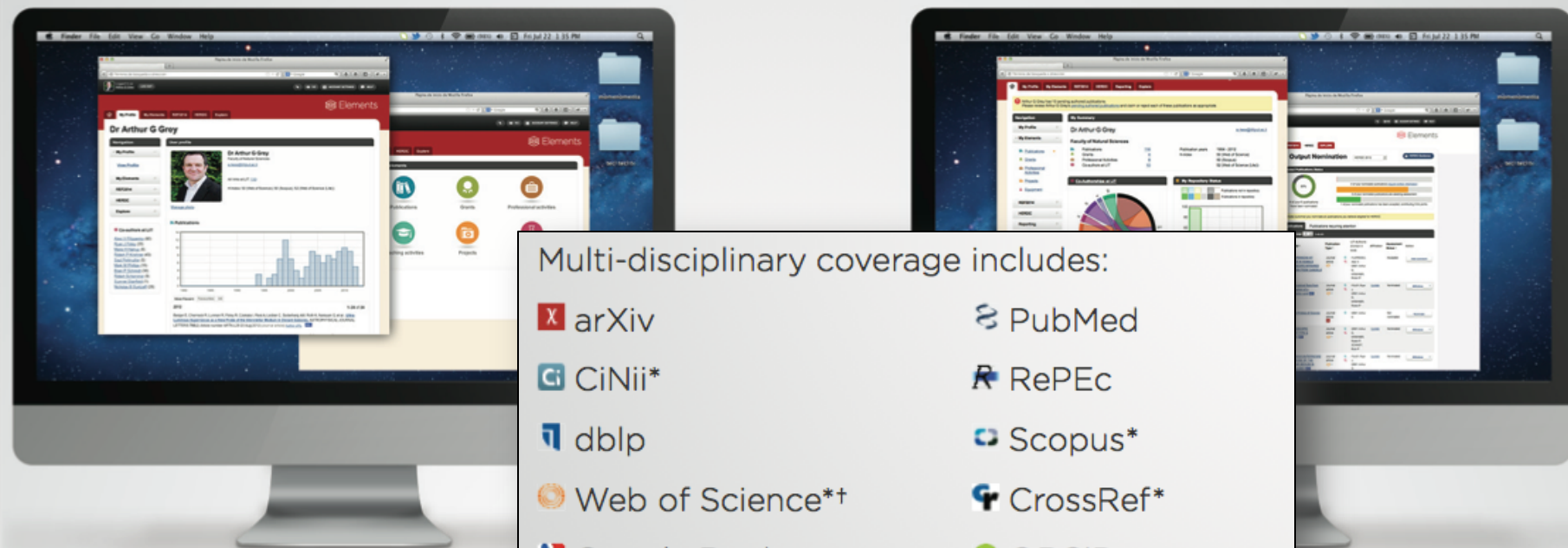
Journal

Publication Type

- ☐ Article
- ☐ Clinical Guideline
- ☐ Comment
- ☐ Conference Paper
- ☐ Editorial Article
- ☐ In Process
- ☐ Letter
- ☐ Report
- ☐ Research Article
- ☐ Review

Organization

Developers: Don Carpenter, Zeheng Wang



Multi-disciplinary coverage includes:

- | | |
|--|--|
|  arXiv |  PubMed |
|  CiNii* |  RePEc |
|  dblp |  Scopus* |
|  Web of Science*† |  CrossRef* |
|  Google Books |  ORCID |
|  Altmetric |  figshare |

*Subject to subscriptions †Lite and Premium web services

<http://vivosearch.org/>
<http://vivosearchlight.org/>
<http://vivo.cns.iu.edu/gallery.html>

Principal Investigator/Program Director (Last, First, MI/Initial)

BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.
 Follow this format for each person: **DO NOT EXCEED FOUR PAGES.**

NAME Michael Conlon		POSITION TITLE Interim Director of Biomedical Informatics, University of Florida	
ERA COMMONS USER NAME MCOLONER		EDUCATION/TRAINING (begin with baccalaureate or other initial professional education, such as nursing, and include postgraduate training)	
INSTITUTION AND LOCATION		DEGREE (if applicable)	YEARS
Bucknell University, Lewisburg, PA		B.A.	1975
Bucknell University, Lewisburg, PA		B.A.	1975
University of Florida, Gainesville, FL		M.St.	1979
University of Florida, Gainesville, FL		Ph.D.	1982
			FIELD OF STUDY
			Mathematics
			Economics
			Statistics
			Statistics

A. Positions and Honors

Positions and Employment

2008-	Interim Director, Biomedical Informatics, College of Medicine, University of Florida.
2008-	Associate University CIO, IT Architecture
2008-	Associate Director, Clinical and Translational Science Institute, University of Florida.
2008-	Interim Director, Clinical and Translational Informatics Program, University of Florida
2008-	Research Associate Professor, Department of Epidemiology and Health Policy Research, University of Florida
2005-08	PeopleSoft Implementation Officer, University of Florida
2002-03	Director of Data Infrastructure, University of Florida
2002-03	Co-founder and Chief Technology Officer, MarCon Global Data Solutions, Incorporated
1997-02	Assistant Vice President for Health Affairs, Academic Information Systems and Support and C
	Information Officer, University of Florida Health Science Center
	Director of Information Resources and Technology Programs, College of Health
1993-07	Director of Information Resources and Technology Programs, College of Health
	University of Florida
1992-08	Research Associate Professor, Dept
1982-83	Asst. Dir. of Acad. Computing, C
1980-83	Director, Clinical Consulting Cen

Other Experience

2009-	Member, InCommon working group
2008-	Chair, Health Science Center Inform
2008-	Member, Health Science Center Inform
2008-	Member, Health Science Planning Group on
2008-09	Chair, University Planning Center Inform
2007-08	Member, Health Science Center Inform
2004-	Member, Educause Working Group on
2003-	Chair, Information Technology Advise
2003-	Editor, AmStat OnLine, American Sta
2003-05	Member, Information Technology Adv
2002-	Member, Information Technology Adv
	Computing
2002-03	Chair, University Directory Services C
2001-03	Member, Microsoft national Higher Ed



CTSA Search Home

CTSA Search
Participation Details

Google Search

Polyglot Home

Federated Search

What is CTSA Search?

CTSA Search is a prototype demonstrating federated search using Linked Open Data published by members of the CTSA Consortium and other interested parties. To try it out, use the form below or click on the "CTSA Search" entry in the menu on the left.

Search for Investigators at Multiple Institutions

Current Status

- Total persons indexed: 48,544
- Total publications by those persons indexed as part of their profile: 450,131

Currently Harvested Sites	Platform
Cornell University	VIVO
Northwestern University	SciVal Experts and VIVO
Oregon Health Science University	SciVal Experts
University of California, San Francisco	Profiles
University of Florida	VIVO
University of Iowa	Loki

Indexed Content

- Persons and their associated properties (name, research statement, etc.)
- Academic Articles for each person with associated properties. Where DOIs or PMIDs exist additional information is added from MEDLINE, including
 - Abstract
 - Keywords
 - MeSH terms
 - Chemicals
 - Genes

We currently use pmid2doi data from from crossref.org and pmid2doi.org to crosswalk DOIs to PMIDs.

We harvest linked open data through SPARQL endpoints using queries based on the VIVO ontology. If you would like to participate, contact Dave Fickenscher with details on how to access your SPARQL endpoint.

Known Issue: Data for Cornell University and Indiana University is incomplete. We continue to gather complete data from the seven partner institutions.

VIVO Search

Find research and expertise

http://vivosearch.org/

alzheimer

People



People Publications 177 Organizations 29 Activities 14 Events 8 Courses Equipment

113 results

Morris, John Carl

... but not tau **Alzheimer** pathology in cognitively normal aging. Morris, John Carl The portable CDR: translating the clinical dementia rating interview into a PDA ...

WashU in St. Louis School of Medicine

Rubin, Eugene Harold

... Prof of Psychiatry Rubin, Eugene Harold Rubin, Eugene Harold Very mild senile dementia of the **Alzheimer** type. I. Clinical assessment. Rubin, Eugene ...

WashU in St. Louis School of Medicine

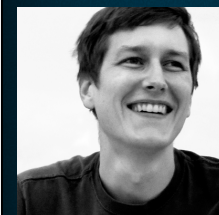
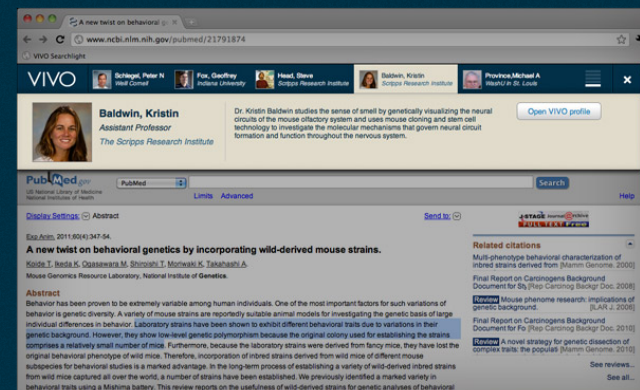
Results by Institution

WashU in St. Louis School of Medicine	52
University of Florida	35
Harvard University	11
Weill Cornell Medical College	8
Cornell University	4
The Scripps Research Institute	3

VIVO Searchlight
A convenient way to find researchers

http://vivosearchlight.org/
@mileswortho

Searchlight is a small app that automatically shows you VIVO profiles related to the page you're reading.



VIVO search scenarios

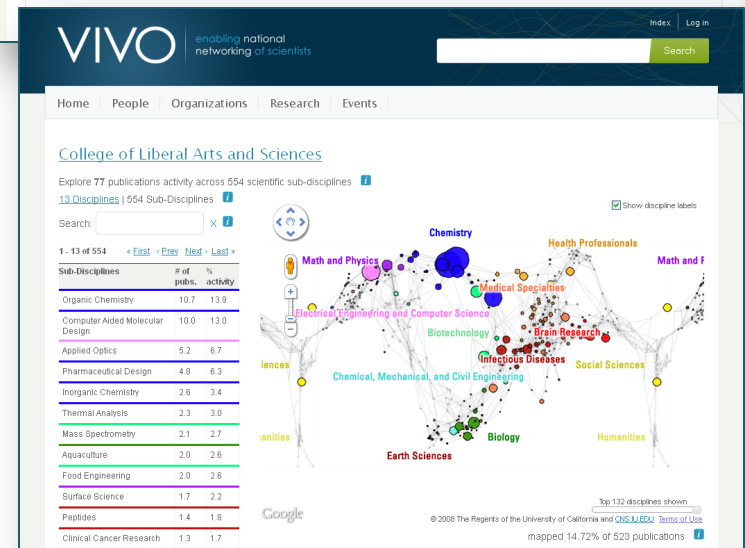
- Multiple campuses of one university
- Regional connections
 - e.g., Illinois ties with regional federal labs
- Consortia – 62+ CTSAs, USDA plus land grant universities
- International
 - 13 Netherlands universities and the National Library
 - German Universities
 - AgriVIVO – UN FAO



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VIVO Community



Pages

PAGE TREE

- [Introduction](#)
- [VIVO Technical Documentation](#)
- [Working Groups and Task Forces](#)
- [Community](#)
- [Search the VIVO wiki](#)

Pages

VIVO

Created by Jim Blake, last modified by Jon Corson-Rikert on Jan 30, 2015

VIVO is an open source [semantic web tool](#) for research discovery for finding people and the research they do. Originally funded by the U.S. National Institutes of Health, VIVO supports editing, searching, browsing and visualizing research activity across disciplines. VIVO's search returns results faceted by type for rapid retrieval of desired information across disciplines at one institution or, through a prototype at [vivosearch.org](#), across multiple distributed institutions.

What is VIVO?

- [Introduction | A short tour of VIVO | FAQs](#)
- VIVO is used at [many institutions](#) including international ones
- The latest version of VIVO is 1.7, released in June of 2014. See [what's new](#).
- Follow us on social media – [Twitter](#), [blog](#)
- The VIVO project is a part of [Duraspace](#). Learn how to support VIVO through [institutional membership](#) in Duraspace.

Developers

- VIVO is a Java Enterprise application built around the Jena Semantic Web Framework. [Download VIVO's source code on GitHub](#)
- [Installation and upgrade guides](#)
- Want to quickly install and evaluate VIVO? Install a [VIVO Vagrant profile](#)
- Standing working groups
 - [Apps and Tools Working Group](#) – VIVO works with a variety of apps and tools to aid in data import, export, and reuse.
 - [Implementation and Development Working Group](#)
 - [VIVO-ISF Ontology Working Group](#)
- Shorter term, focused [task forces](#) and the process of proposing them

Calendar

The VIVO community offers a variety of workgroup sessions, conferences, and hackathons.

Tuesday, February 3

- 1:00pm [VIVO-ISF ontology open office hours](#)
- 3:00pm [VIVO i-fest planning call \(biweekly\)](#)

Thursday, February 5

- 1:00pm [Implementation/Development Call](#)

Friday, February 6

- 1:00pm [VIVO Steering Group](#)

Monday, February 9

- 4:00pm [VIVO Management Team](#)

Thursday, February 12

Events shown in time zone: Eastern Time



Participate in the community

- Have a question?

VIVO projects around the world



<https://wiki.duraspace.org/display/VIVO/Sites+implementing+VIVO>

A Growing Community

Federal agencies – White House OSTP, NIH, NLM, NSF, USDA, EPA, FRPS, STAR Metrics, SciENCV, FDP ...

Data Providers/Partnerships – CASRAI.org, European current research information systems (euroCRIS), Symplectic Elements, Elsevier, ORCID, CiteSeer, arXiv, PLoS, Avedas, Thomson Reuters, BioMed Central, institutional repositories, team science, ...

Professional Societies – APA, AAAS, AIRI, AAMC, ABRF, ...

International collaborators – Australia, Belgium, Brazil, Canada, China, Costa Rica, Germany, Hungary, India, Iceland, Ireland, Mexico, Netherlands, New Zealand, Pakistan, Poland, UK, ...

Semantic Web community – DERI, Tim Berners-Lee, Jim Hendler, ConceptWeb Alliance, OpenPHACTS (EU), Linked Data, MyExperiment, ...

Ontology – eagle-i, OBO Foundry, NBIC, eBIRT, knowledge mobilization

Open Source cooperatives – DuraSpace, Sakai OAE, Karma, Kual, ...

Social Network Analysis Community – Northwestern, UC Davis, UCF, ...

Schools and Consortia – CTSAs, Pittsburgh, Stony Brook, Duke, Weill, Indiana, Cornell, Washington U, NYU, Stony Brook, Ponce, Scripps, Emory, Iowa, Harvard, Rochester, UCSF, Stanford, MIT, Brown, Michigan, Nebraska, Colorado, Hunter, OHSU, Minnesota, Maastricht, U Penn, Penn State, Northeastern, UVA, TAMU, Virginia Tech, Northwestern ...

Stats – downloads (>60,000), contact list (>3,000)

Four annual events – conference (Aug, Cambridge, MA), implementation fest (March, OHSU), workshops, hackathon

Open Source Community – github.com/vivo-project/VIVO

Learn more – wiki.duraspace.org/display/VIVO, vivoweb.org, vivo.vivoweb.org, @VIVOcollab on Twitter

Current and future VIVO efforts



VIVO Updates

VIVOs

- 120+ impl. & pilot projects
- 35+ countries
- 15+ CTSAs

Standards

- CTSAconnect Integrated Semantic Framework ontology
- ORCID
- CASRAI
- others

Partners

- Symplectic
- euroCRIS
- W3C, DERI, ConceptWeb Alliance, OpenPHACTS
- Institutions/organizations

Events

- VIVO conference Aug. 2015
- Spring Implementation Fest @ OHSU
- DuraSpace VIVO webinars

Community

- VIVO wiki
- Listservs
- Weekly calls
- GitHub
- vivoweb.org
- @VIVOcollab

What roles can the library play?

Libraries:

- Are a trusted, neutral entity
- Have a tradition of service and support
- Strive to serve all missions of the institution
- Are technology centers and have IT and data expertise

Library Staff:

- Have skills—information organization, instruction, usability, subject expertise
 - Have close relationships with their clients (buy in)
 - Understand user needs
 - Understand the importance of collaboration and know how to bring people together
 - Have knowledge of institution, research, education, clinical landscape
- 

What roles can the library play?

Librarians are successfully stepping up to the semantic web plate in a variety of roles related to institutional research networking platforms.

- Outreach and adoption activities
- Education and training on the use of the platform
- Ontology and controlled vocabulary expertise, extending the model
- Negotiations with data providers
- Programming, technical support
- Workgroup representation
- ...and more!

Research networking also provides an opportunity for libraries to become familiar with many concepts around linked open data and the semantic web.



Acknowledgements

Funding:

- Northwestern University Clinical and Translational Sciences Institute, NIH award UL1TR000150
- VIVO, NIH award U24 RR029822
- VIVO/DuraSpace

Questions/Follow-up:

- kristi.holmes@northwestern.edu
- kristi@vivoweb.org
- **Twitter:** @kristiholmes

Thanks!