

An Overview of VIVO at IU

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INDIANA UNIVERSITY

VIVO Research & Expertise Across Indiana University

Overview

- What is VIVO?
- How does it work?
- How have we implemented it at Indiana University?
- What's ahead?
 - Incentives
 - Challenges

VIVO Collaboration:

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 Raum, Brenda Stevens, Alicia Turner, Stephen Williams. **Indiana University:** Katy Borner (IU PI), William Barnett, Ryan Cobine, Shanshan Chen, Ying Ding, Russell Duhon, Jon Dunn, Micah Linnemeier, Nianli Ma, Brian Keese, Robert McDonald, Barbara Ann O'Leary, Mark Price, 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, Michaeleen 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.

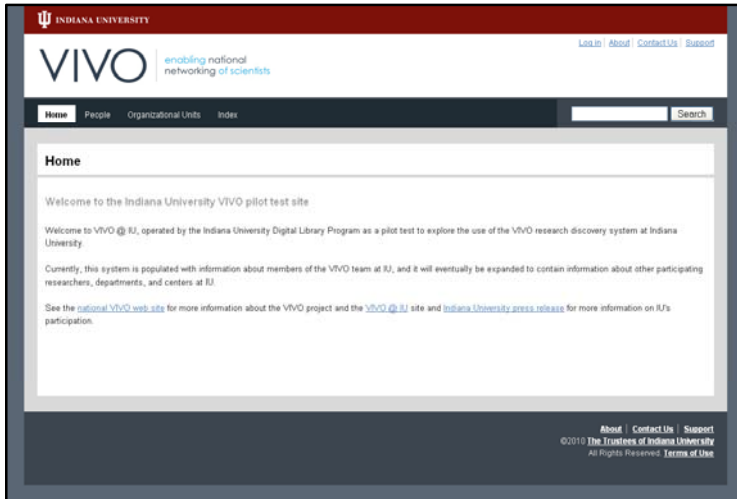
VIVO is:



A **semantic web application** that enables the discovery of research and scholarship across disciplines in an institution.

Populated with **detailed profiles** of faculty and researchers; displaying items such as pubs, classes, service, and affiliations.

A **powerful search functionality** for locating people and information within or across institutions.



VIVO is a resource of Indiana University that provides information on:

- people
- departments
- facilities
- courses
- grants
- publications

vivo.iu.edu

What is VIVO?

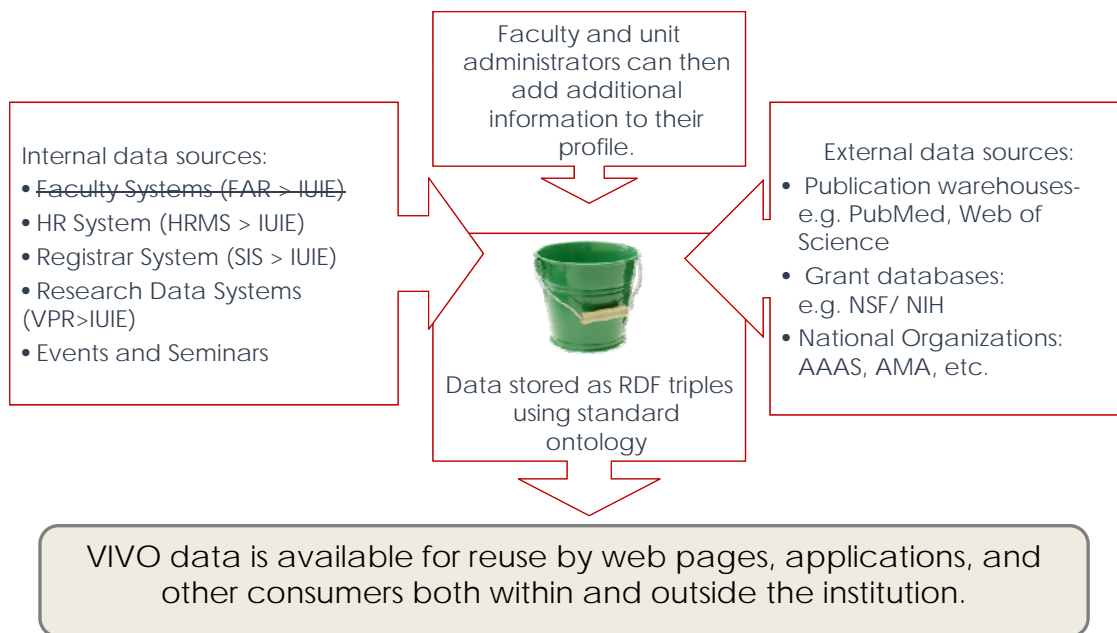
An open-source **semantic web application** that enables the discovery of research and scholarship across disciplines in an institution.

Populated with **detailed profiles** of faculty and researchers; displaying items such as publications, teaching, service, and professional affiliations.

A **powerful search functionality** for locating people and information within or across institutions.



VIVO harvests data from IU verified sources



Linked Data Principles

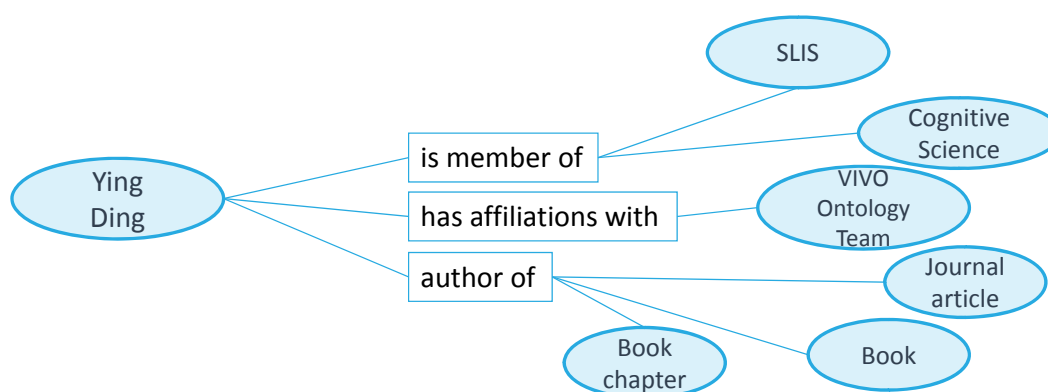
- Tim Berners-Lee:
 - Use URIs as names for things
 - Use HTTP URIs so that people can look up those names
 - When someone looks up a URI, provide useful information, using the standards (RDF, SPARQL)
 - Include links to other URIs so that people can discover more things
- <http://www.w3.org/DesignIssues/LinkedData.html>
- <http://linkeddata.org>
- <http://www.data.gov/>
- <http://data.gov.uk/>

VIVO Standard Ontology

- Network Structure: foaf:Person, foaf:Organization, vivo:InformationResources
- Individual
 - Research (bibo:Document, vivo:Grant, vivo:Project, vivo:Software, vivo:Dataset, vivo:ResearchLaboratory)
 - Teaching (vivo:TeacherRole, vivo:AdvisingRelationship)
 - Services (vivo:Service, vivo:CoreLaboratory, vivo:MemberRole,)
 - Expertise (vivo:SubjectArea)

Storing Data in VIVO

- Information is stored using the **Resource Description Framework (RDF)** .
- Data is structured in the form of “triples” as subject-predicate-object.
- Concepts and their relationships use a **shared ontology** to facilitate the harvesting of data from multiple sources.

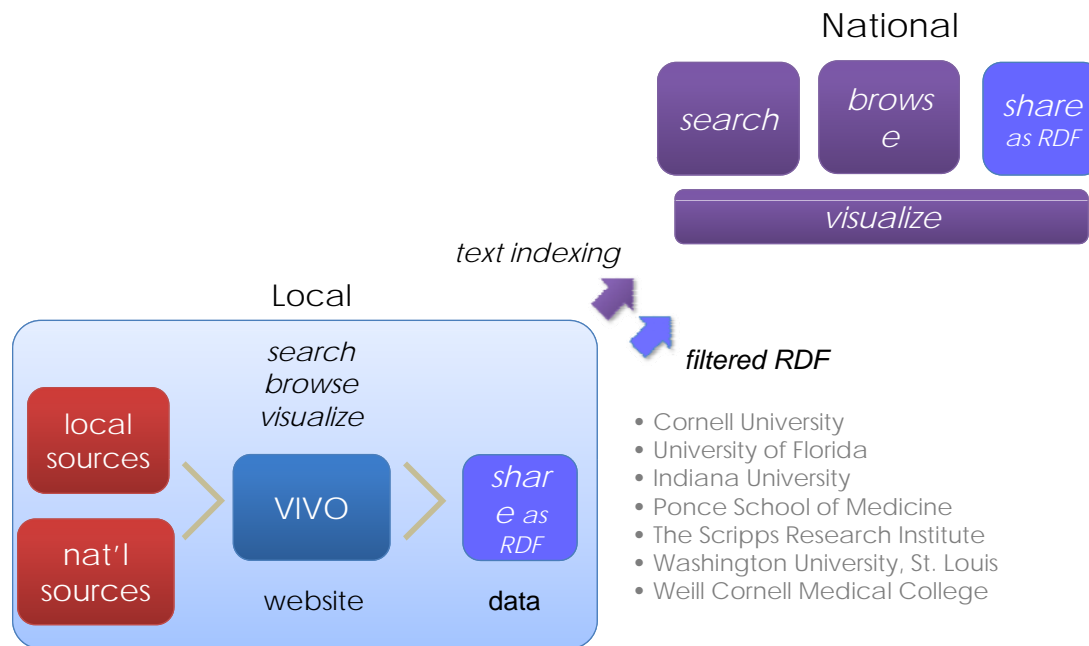


Subject

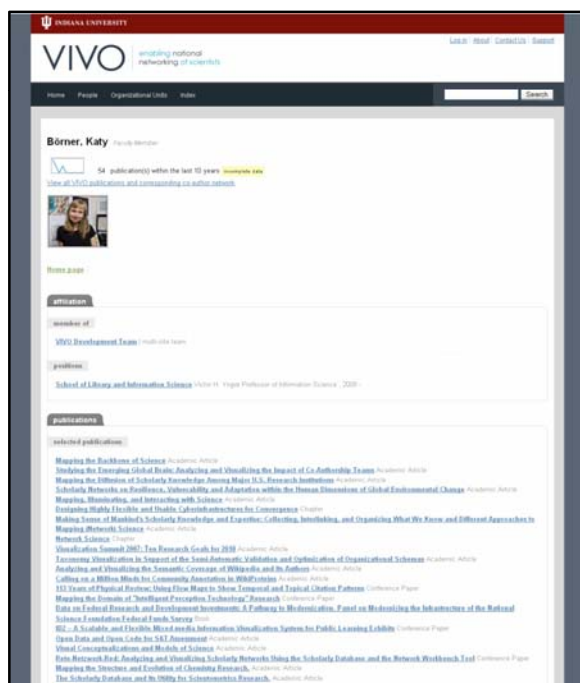
Predicate

Object

Linked Data: Local to National Scale



A VIVO profile will allow researchers to:



Map colleagues by research area, authorship, and collaborations.

Showcase credentials, expertise, skills, and professional achievements.

Connect within research areas and geographic expertise.

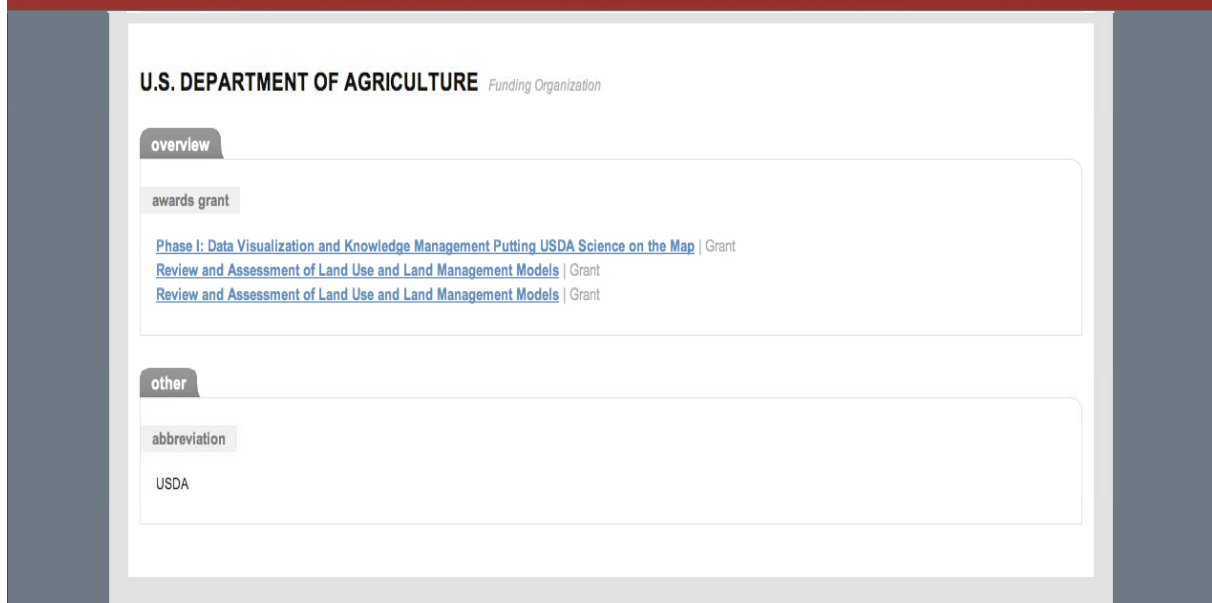
Display current research, and selected publications.

Publish the URL or link the profile to other applications.

VIVO Implementation at IU

- Current Implementation at IU
 - Data Sources Used
 - Public Data
 - All is currently available for free or pay somewhere
 - Current Funding Model
 - Future Sustainability (IUScholarWorks)

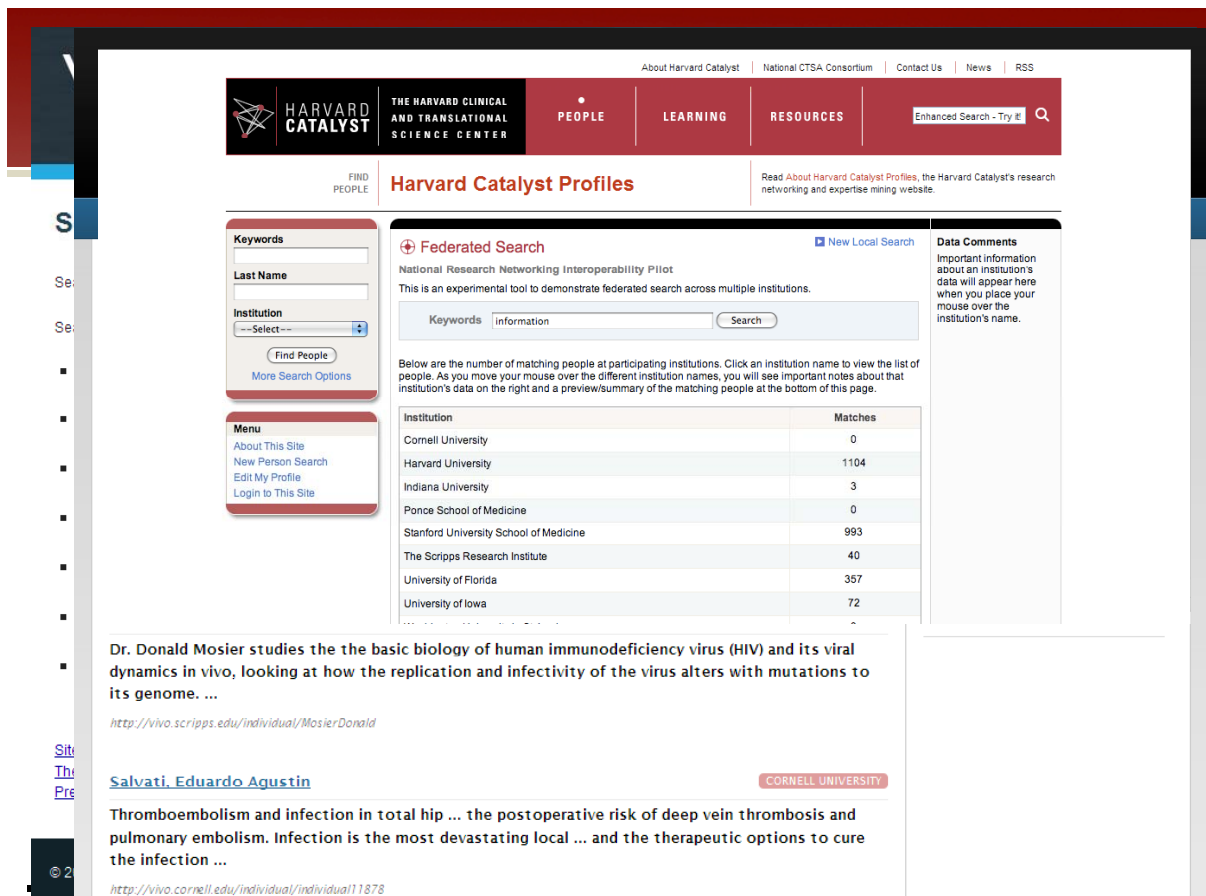
VIVO Implementation at IU



The screenshot displays a VIVO record for the U.S. DEPARTMENT OF AGRICULTURE, identified as a Funding Organization. The record is organized into sections: 'overview', 'awards grant', and 'other'. Under 'overview', there are three entries: 'Phase I: Data Visualization and Knowledge Management Putting USDA Science on the Map | Grant', 'Review and Assessment of Land Use and Land Management Models | Grant', and 'Review and Assessment of Land Use and Land Management Models | Grant'. Under 'other', there is an 'abbreviation' section with the value 'USDA'.

Incentives

- Federated Searching Across Domains
 - CTSA Federated Search
 - VIVO Federated Search
- NIH/NSF Biosketch Generation
- Mapped Data from IU Institutional Data Sources
 - 80/20
- Visualization and Scientometric Mapping Components

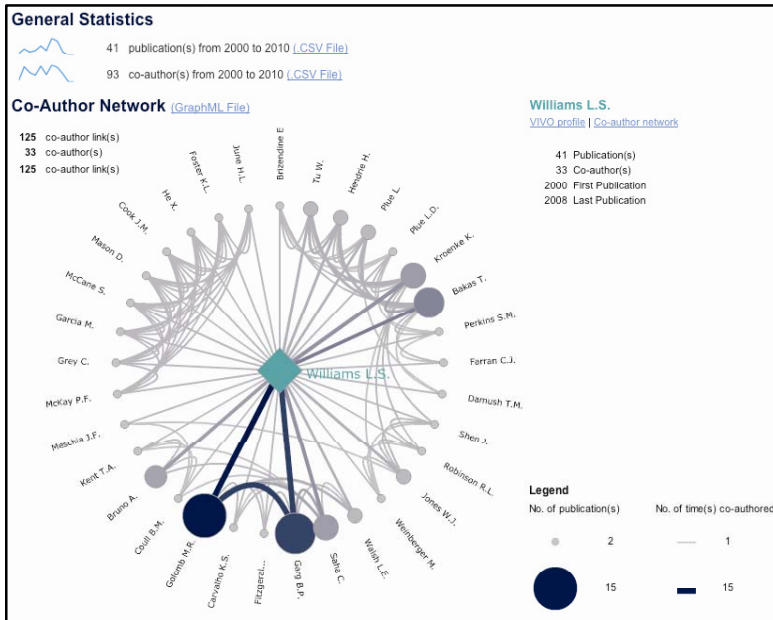


The screenshot displays the Harvard Catalyst Profiles website. At the top, there is a navigation bar with links for 'About Harvard Catalyst', 'National CTSA Consortium', 'Contact Us', 'News', and 'RSS'. The main header includes the Harvard Catalyst logo and the text 'THE HARVARD CLINICAL AND TRANSLATIONAL SCIENCE CENTER'. Below this, there are tabs for 'PEOPLE', 'LEARNING', and 'RESOURCES', along with a search box labeled 'Enhanced Search - Try it!'. The main content area is titled 'Harvard Catalyst Profiles' and features a 'FIND PEOPLE' button. On the left, there is a search form with fields for 'Keywords', 'Last Name', and 'Institution', and a 'Find People' button. Below the search form is a 'Menu' with links for 'About This Site', 'New Person Search', 'Edit My Profile', and 'Login to This Site'. The central part of the page is titled 'Federated Search' and includes a search box with the keyword 'information' and a 'Search' button. Below the search box, there is a table showing the number of matching people at various institutions. The table has two columns: 'Institution' and 'Matches'. The data is as follows:

| Institution | Matches |
|--|---------|
| Cornell University | 0 |
| Harvard University | 1104 |
| Indiana University | 3 |
| Ponce School of Medicine | 0 |
| Stanford University School of Medicine | 993 |
| The Scripps Research Institute | 40 |
| University of Florida | 357 |
| University of Iowa | 72 |

Below the table, there is a section for 'Data Comments' and a list of search results. The first result is for 'Dr. Donald Mosier' with a link to his profile: <http://vivo.scripps.edu/individual/MosierDonald>. The second result is for 'Salvati, Eduardo Agustin' with a link to his profile: <http://vivo.cornell.edu/individual/individual11878>. The profile for Salвати, Eduardo Agustin is highlighted with a 'CORNELL UNIVERSITY' tag.

Visualization



- **Display** visualizations of complex research networks and relationships.

Challenges

- Faculty Annual Report Data
 - Gray Area of Use
 - Need partners to move forward appropriate use policy
- Name Disambiguation for Automated Sources
 - NIH PubMed
 - NIH RePORTER
 - NSF research.gov
 - NSF Grants

Future versions of VIVO will:

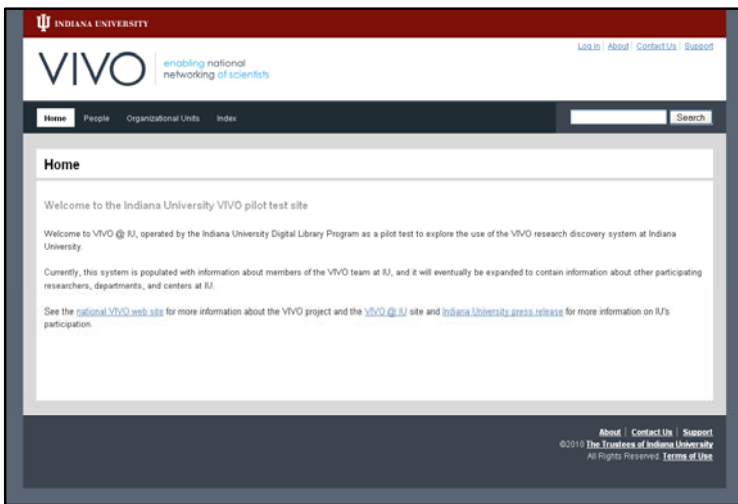
| Principal Investigator/Program Director (Last, First, Middle): | | | |
|--|------------------------|---|-----------------------|
| BIOGRAPHICAL SKETCH Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2. Follow this format for each person. DO NOT EXCEED FOUR PAGES. | | | |
| NAME Schleyer, Titus | | POSITION TITLE Associate Professor and Director, Center for Dental Informatics, University of Pittsburgh | |
| eRA COMMONS USER NAME titus1 | | | |
| EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.) | | | |
| INSTITUTION AND LOCATION | DEGREE (if applicable) | YEAR(s) | FIELD OF STUDY |
| The Fox School of Business, Temple University, Philadelphia, PA | MBA | 1985 | Health Administration |
| School of Dentistry and School of Medicine, University of Frankfurt am Main, Frankfurt/M, Germany | PhD | 1989 | Molecular Biology |
| School of Dentistry, University of Frankfurt am Main, Frankfurt/M, Germany | DMD | 1987 | Dentistry |
| Temple University, School of Dentistry, Philadelphia, PA | DMD | 1991 | Dentistry |

- **Generate** CVs and biosketches for faculty reporting or grant proposals - NIH/NSF.
- **Incorporate** external data sources for publications and affiliations.
- **Link** data to external applications and web pages.

A. Positions and Honors.

Other Profile Testing at IU

- Working Toward Unified Ontology Profile for IUIE
 - School of Medicine Faculty Profile System
 - CTSI Hub Profile System
 - CTSI Research Networking Pilot
- Departmental Tests for IUB FAR Data (VPFAA)
- IU System-Wide Tests for Preliminary IUIE Generated Profiles (VPR)



How Can I Get Involved?

Questions?
Robert McDonald
robert@indiana.edu

Thank you!