

VIVO

Enabling National  
Networking of Scientists

## National VIVO Network | **Implementation Plan**

Version 1.1  
August 2010

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## **Executive Summary**

The National VIVO Network uses an open source semantic web application framework that presents and retrieves information in a standard format from local institutions. VIVO creates an interdisciplinary networking site for researchers that enables the discovery of research and scholarship across multiple institutions. VIVO (not an acronym) brings together publicly available information on people, departments, graduate fields, facilities and other resources that collectively make up the research and scholarship environment in all disciplines on one site. VIVO supports browsing and a simple faceted search function for rapid retrieval of desired information. Content in any local VIVO installation may be maintained manually or brought into the database in automated ways from local systems of record providing the best available human resources, grants, courses, and faculty activity information. In addition to centralizing information from a variety of authoritative sources, VIVO also makes information available for consumption by other web sites.

### **Goal of Business Plan**

The business plan will help other institutions that would like to join the VIVO network gather the necessary information to assess what implementation will entail on their local campus. This plan will contain the costs associated with implementation, personnel needed, an operational strategy both for large and small institutions as well as an action plan.

### **Intended Audience**

This document is intended for faculty and administrators who are interested in adopting and implementing VIVO at their institution.

## **Background Information**

VIVO was developed at Cornell University in 2003 and first released as a public website in 2004. VIVO was initially created to connect scientists/researchers and resources in the life sciences

domain. As researchers and faculty embraced the newly created network the project continued to expand to other disciplines. VIVO began as a database populated by hand from other websites at the university, and from the beginning allowed information to be linked through a series of relationships between pages rather than displayed in simple rows and columns or lists. "The idea of VIVO was to transcend administrative divisions and create a single point of access for scholarly interaction. Now that VIVO is expanding across institutions, the biomedical community will be able to benefit from that bird's eye perspective of their research." Medha Devare

VIVO is currently being developed and implemented at seven universities. The seven universities include Cornell University, The University of Florida, Washington University School of Medicine at St. Louis, Indiana University, The Scripps Research Institute, Ponce Medical School, and Weill Cornell Medical College.

VIVO displays search results by type -- people, organizations, events, activities, publications or other items of interest -- and displays pages with appropriate cross-referencing to place them in a context that makes sense and saves time. The goal is to foster alliances, making research and discovery move faster.

For more information on key features and benefits of VIVO, please see: <http://vivoweb.org>.

## Implementation Requirements

As VIVO is open source, there are no costs to download, install or contribute data to the national network. Below is an outline of the hardware, software and personnel skills required, as well as the steps for implementation and an overview of the appropriate data sources.

### Technical Requirements:

#### Hardware:

- 8 GB of RAM recommended, 4 GB of RAM required

Software:

- Apache
- JAVA (JDK)
- Tomcat
- MySQL

Operating System:

- Linux or Windows

**Personnel Requirements:**

The following should be used as general guidelines regarding skills needed, and minimum FTE estimates, for initial installation/implementation, ongoing maintenance, and outreach. It is possible for one person to serve in multiple functions. Technical support personnel typically exist in-house. Additionally, utilizing existing library subject specialists can be valuable for training, outreach, and information management; these are individuals who already understand the research landscape at an academic institution, and have the expertise, experience, and service ethic to perform these responsibilities well.

Programmer/analyst – Responsible for data ingest planning and execution by modifying template examples to accommodate any required local extensions to the application ontology (data model); responsible for ongoing maintenance ontology and data through the VIVO application, stored in a MySQL database. Willing to become familiar with RDF data model, semantic web design principles and a query language such as SPARQL. Knowledge of SQL can assist with understanding of SPARQL. (Ongoing ~ .5 - 1.0 FTE)

Systems administration – maintains and operates the computer systems and network. Knowledge of the application support systems and application itself; hardware and software troubleshooting. Web and security administration. (Ongoing ~ .10 FTE)

Information management – knowledge of information architecture, a role potentially filled by a librarian. Ideally, experience should include knowledge of metadata standards, taxonomies, ontologies and databases. Must be willing to familiarize themselves with semantic web concepts and the software development lifecycle. Will provide direction in potential local ontology development. Functions as negotiator with stewards of local data sources. Initially working primarily with information management and eventually providing outreach support and training to local community. (~ 1.0 FTE)

Training and outreach – provides outreach support and training to local community. (Ongoing ~ 1.0 FTE spread across library subject specialists)

Optional:

Web design – if a site chooses to redesign or rebrand the VIVO interface, solid web design skills are required. (~.25 FTE)

### **Data Sources:**

- Organizational data – Not always well represented in existing systems of record. Typically organizational data is manually inputted using, when available, human resource organizational structure data and existing web pages
- Demographic data – Acquired from local human resource system, such as PeopleSoft. VIVO manager must decide whom to include within local VIVO system (faculty, academic staff, graduate students, undergraduate students, etc.) Data elements include: name, email, title, working title, department code, unique identifiers. Only publicly visible data elements should be included in VIVO.
- Grant data – Ingest from local Office of Sponsored Research. Data elements include: grant title, institutional award ID, sponsor ID (when available), start and end date, grant status, award amount (optional), administering department, primary investigator, co-investigator, funding organization, subcontract organization. Also, when available: grant abstract, grant keywords, and impact statement.
- Publication data – Ingest from local institutional repositories or faculty activity directories. Data elements include: article/book title, journal title, author(s), volume, issue, year, pagination, edition, publishing agency, conference title, persistent URL/DOI, abstract, and keywords
- Course data – Ingest from local registrar system. Data elements include: course title, course number, department, instructor(s), description
- Faculty activity data – Ingest from local faculty activity systems (research areas, professional service, etc.)
- Other Institutional Sources – Center and program affiliations, events and seminars, news releases, new faculty feature articles, directory contact information
- Images – Ingest or manual, depending on local context
- User input – Research interests, biographical overview, international activities, verifying publications
- CVs and Biosketches – Any desired manual input of supplementary data (research, geographic interest, grey literature, etc.)

### **Implementation Strategy:**

1. Purchase server(s)
2. Install VIVO software
3. Manually input several departments and people as sample data to use when approaching data stewards
4. Identification of local data sources
5. Approach local data stewards with outline of required data
6. Acquisition of publication data from third party data aggregators
7. Creation of local ontology extensions, if needed
8. Manually input organizational structure of institution
9. Ingest of demographic data
10. Ingest of national data (publications, grants, etc.)
11. Ingest of local data (local grant and publication information, courses, etc.)
12. Manual input from supplementary sources
13. Customization of website display theme, if desired
14. Outreach and marketing to campus community (ongoing)

## Marketing & Education Summary

The marketing and education strategy plan will be vital to an institution once initial stakeholders have successfully executed a full implementation. Local marketing and education template materials are available on the National VIVO Network website (<http://vivoweb.org/support>).

These materials will help your institution effectively generate interest as well as teach users how to benefit from VIVO and promote full participation from your faculty and staff. Please note that the templates can be edited so you are able to customize them to your institution needs. We understand that each institution is very different and features may vary due to the information gathered.

### Ready-to-Use materials:

Item Name	General description of item
Logos	VIVO logos of various size and resolution for use in web, print, and digital media.

Style and Identity Guides	Guidelines for using the VIVO brand and logo in multiple media formats, and in conjunction with institutional branding.
System Guides	Documentation describing the processes for installing, upgrading, and administering the VIVO application.
Media Kit	Folder of marketing and educational products about the VIVO application.
Brochure	General information about the VIVO application.
Tutorials	Quick reference educational materials for VIVO users organized to reflect various roles in the system.
Poster	Poster with VIVO brand that presenters can use in preparing poster presentations at conferences or on campus.

**Customizable items available to promote and train faculty at your institution:**

Item Name	General description of item
Presentation(s)	General VIVO overview with talking points for presenters; information on the technical aspects of VIVO; implementation plan and strategy
Print Advertisements	What is VIVO, what is national networking, what will each do for you (strengths in comparison to other tools, and by audience), participate/contact/subscribe info, vivoweb URL
Postcards	Features of VIVO, national networking; participate/contact/subscribe info, vivoweb URL but customizable by institution
Bookmarks	What is national networking, vivoweb URL, spot to add institution logo

Brochures	About VIVO and national networking (what will each do for you, strengths in comparison to other tools, and by audience), how to participate, how to contact/subscribe for news, vivoweb URL
Online Banners	Banners that institutions can customize with their logos
Posters	Poster template with VIVO brand that presenters can use in preparing poster presentations
Handouts	Handout Template with VIVO brand and history - similar content from poster and brochure

## Alternative Implementation Plans

### Manual Data Entry

Institutions, particularly smaller institutions with different data management structures, may find they lack local data sources from which to ingest data. In these cases, manual entry of profile data is a realistic solution. Most manual inputting is quick and can be accomplished using a responsible and well-trained student assistant. Publications represents a large data set, and is difficult to enter manually. This task can be alleviated through the acquisition and ingest of publications acquired through third party vendors (PubMed, Scopus, Web of Science). See the Guide to Manual Data Input found on <http://vivoweb.org/support> for more information.