

# VIVO Strategic Plan 2015-2016

## Summary

The VIVO community is at a significant transition point in its history. Like many open source communities, VIVO grapples with typical issues of community engagement, allocation of scarce resources, setting priorities, organizing and accomplishing work, communication, and decision-making. To address these issues, VIVO must continue on its path to evolve into a growing open source community that is financially independent, highly productive, and comprised of actively engaged members. VIVO leadership, guided by this Strategic Plan, will advance a purposeful agenda to build a community whose members and stakeholders are familiar with its high priority goals and value proposition. This focus will provide the community with direction and guidelines for identifying and defining work so that their contributions are strategically aligned and can be executed quickly.

The VIVO Leadership Group approved the creation of the VIVO Strategy Group in August 2014. The VIVO Strategy Group developed this Strategic Plan to articulate the project's high priority goals and value proposition. The plan addresses the challenges that the VIVO community faces and establishes priorities and actions for overcoming them.

The VIVO Strategy Group recognizes the critical need for VIVO to satisfy its customers and stakeholders through sustainable value creation. The proposed value proposition has been created to serve as a foundation for VIVO:

***VIVO provides an integrated view of the scholarly work of an organization***

The Strategy Group recognizes two critical goals for the VIVO open source community, which include:

### **Goal 1: Clarify and improve the VIVO value proposition**

The value of VIVO lies in its capability to integrate disparate sources of information (people, their work, funding sources, and other data) and expose it via interoperable linked data standards. Data integration provides an organization, project, or consortium with the power to develop a deep understanding of multiple types and sources of information, create enhanced visualizations, and integrate views of clinical and research data to help achieve strategic goals. Integration and data interoperability generate insights to simplify and accelerate decision-making. This, in turn, leads to lower costs, improved visibility of competitive strengths and weaknesses, and facilitates cross-institutional and cross-disciplinary collaborations. To improve the value of VIVO, actions must address an urgent need to increase the engagement of VIVO community members and the work they contribute back to the community. The Strategy Group proposes hiring a dedicated, full-time Technical Lead to harness the talents and strengths of community members; not just technical skills, but all skills required to further community engagement and improve customer satisfaction and user experience. This role would coordinate technical resources to lower barriers for adoption, improve extended functionality of VIVO software, the VIVO-ISF ontology, and promote the development of modern web-based applications and tools that users want.

### **Goal 2: Promote a more open and networked research ecosystem**

All VIVO projects function within an international networked ecosystem of linked data to facilitate research and scholarly interchange. VIVO has emerged as a leading community in this information ecosystem and vigorously advocates for policies that promote improved data sharing through the use of common standards. Sharing and delivering interconnected VIVO data for query, search, visualization, and analysis has a major positive impact on other broader initiatives committed to open science, stable identifiers (to ensure data resolution), and interoperable data standards across the academic and research landscape. The value of a linked data infrastructure increases with the amount of linked data and applications that are available for consumption. A linked data landscape enables complex analytics of science of team science, evaluation, and informs institutional policy making.

Actions required to ensure VIVO's leadership in the creation of an open ecosystem include formalizing and leveraging partnerships with, for example, ORCID, euroCRIS, CRediT, and CASRAI. VIVO must also attract and support projects that build on the VIVO framework, such as EarthCollab, the Deep Carbon Observatory, the UN FAO, and many others. Finally, we need to consult and interact with a diversity of efforts to demonstrate our strong commitment to open scholarship through the reuse of existing standards such as W3C and OBO Foundry. VIVO must continue to play a lead role to nurture innovation and collaboration and model best practices for developing data exchange standards.

## Context

VIVO was first developed at Cornell University in 2003 and transitioned to an open source semantic platform in 2007-8. Progress accelerated rapidly in 2009 when NIH awarded a \$12.2M grant to the University of Florida. This research program established a seven-university VIVO consortium and during 2009-2012, the VIVO project achieved successive software releases, created the VIVO ontology, and launched the VIVO open source community. A highly successful outreach and implementation program was developed to engage and expand the community. The first annual VIVO conference was held in 2010, and the VIVO community grew significantly due to the adoption of VIVO at several institutions. VIVO community leaders partnered with DuraSpace in 2013 to address long-term sustainability in transitioning away from grant funding. DuraSpace is a 501(c)(3) not-for-profit organization that provides leadership and innovation for building sustainable, open source communities, technologies, and services. During 2013-2014, the VIVO Founding Sponsors contributed \$270,000 to support a full-time project director, a part-time programmer, and part-time community outreach, communications and strategic administrative support. Overall membership revenue for 2013 was \$200,000 and the DuraSpace membership program launched in 2014 raised \$340,000 (this amount includes some of the initial contributions from Founding Sponsors along with \$102,500 in new memberships and corporate sponsorships). Annual income of \$500,000 will be required to support key priorities and hire a full-time technical lead. VIVO will need to grow the community and expand adoption by attracting financial and in-kind support from new members and corporate sponsors. In 2014, VIVO adopted a charter and established a governance model to foster adoption of open source processes. A VIVO project at any institution brings greater exposure to local data quality issues, requires new partnerships and workflows, and engenders significant ongoing commitments to outreach and promotion. As a community, VIVO asks individuals and institutions to reach beyond local priorities to contribute ideas, data, and tools to support the broader goal of building an open and collaborative ecosystem.

## Priority Goals and Recommended Actions

The Strategy Group identified 15 high-priority goals during the strategic planning process. Action plans were identified for these goals. VIVO leadership has consolidated 15 goals into this Strategic Plan by focusing on two overarching goals. These goals and corresponding recommendations for action are presented below.

## Goal 1: Clarify and improve the VIVO value proposition

**Action 1A. Hire a full-time technical lead.** The technical lead will coordinate technical tasks across the project to increase productivity by building strong community participation. The lead will align software and ontology development, coordinate a review of the VIVO architecture, and implement a road map process to orchestrate a project-wide release process. Other suggested technical lead priorities include: managing cross-functional task groups; reviewing democratic code contributions from in-kind and volunteer developers; ensuring transparency of project work; coordinating documentation and modeling best practices.

**Action 1B. Adopt an agile collaboration model designed to optimize productivity of open source projects.** VIVO's current working groups actively share cross-project information, provide support to new and existing members, and discuss new technologies that are relevant to the VIVO project. However, there is no efficient process in place for the working groups to solicit, identify, prioritize, or manage the execution of work required to enhance VIVO. A model to formalize and guide work processes has been created by the W3C, Apache, and Research Data Alliance communities. It provides an agile means for undertaking focused projects to meet key goals. The "VIVO Task Force" model is a lightweight process for defining projects with focused objectives, specific deliverables, and short timeframes (2-4 months). A key feature of the model is that it explicitly requires solicitation of participants from the community. The process is being tested in VIVO's environment and currently 3 Task Force Charters have been created and are under review. Community members have also suggested several more task forces.

**Action 1C. Improve clarity and transparency.** Launch a redesigned [vivoweb.org](http://vivoweb.org) web site as a comprehensive resource for the VIVO community with outreach, installations, adoption, events, technical support, and links to the wiki, blog, twitter stream, issue tracker, and GitHub code and ontology repositories. Leverage these tools to help identify, prioritize and realize improvements to the VIVO technology and ontology. Identify the stages and components of successful VIVO projects so that developers and adopters can easily understand the challenges and steps involved. Provide transparency in governance operations, roles, and responsibilities through public access to all meeting minutes and increase the frequency of communications.

**Action 1D. Lower barriers to adoption and contribution.** The questions that prospective users typically ask about VIVO are very similar and often predictable, which calls for a well organized, up-to-date set of core information resources to be created. Offering consultations on new projects can identify policy issues, data sources, and facilitate team formation. A slide deck describing the VIVO project and its value proposition in a format that is easy to supplement and customize will help users to launch local marketing and outreach. A survey of the VIVO community to collect data about local outreach processes and information resources, adoption of best practices and lessons learned will further promote sharing knowledge at a peer-to-peer level. Starter kits for new adopters will highlight requirements, training opportunities, and point to a community registry that lists skills, applications, and tools. Expanding the number and range of service and support providers will also enhance the options available to users and better connect VIVO with other key institutional information needs and solutions.

**Action 1E. Improve the modularity of the VIVO core code.** Incremental changes to the VIVO core code over several releases have begun to address the issue of modularity. Improved interoperability and modularity of the VIVO core code is of paramount importance for rapid development of functionality and features that users are eager to adopt. Modules that accommodate alternative triple stores, search engines and index tools, reasoners, visualization tools, internationalization, gadgets, etc. are all necessary. Prioritizing modularity will result in providing VIVO implementers with maximum flexibility to choose from a broad spectrum of commercially available and open source tools.

**Action 1F. Aggressively promote the value of VIVO membership within DuraSpace.** Membership provides value because VIVO organizations work collaboratively through their own elected Leadership Group and DuraSpace to advance the design, development and sustainability of the project. DuraSpace also provides mentoring expertise across its several projects on technical and open source best practices, sustainability planning, fundraising, community development, marketing and communications, collaborations and strategic partnerships, and administration. Increased customized marketing campaigns will create interest and awareness among potential members and corporate sponsors by closely connecting VIVO's key goals with fundraising. During the 2015 Membership Campaign, VIVO needs to raise \$500k in annual membership revenues to sustain and grow a robust, adequately staffed project.

## Goal 2: Promote a more open and networked research ecosystem

**Action 2A. Leverage partnerships outside of the VIVO community that align with the VIVO strategy.** VIVO has initiated partnerships with a number of organizations in the linked data and research information space including ORCID, W3C, euroCRIS, CASRAI, FORCE11, SciENcv, CRediT, & JISC. These partnerships require reinvigoration and refocus to establish clear common goals, increase cross-fertilization of ideas and policies, ensure data interoperability, and minimize the creation of redundant systems or competing data standards. It is necessary to identify individual VIVO community members to manage each partnership and encourage VIVO leadership roles in all partner activities.

**Action 2B. Further develop the VIVO-ISF as a data standard for researcher profiling data exchanges.** Data Standards are critical to integration, interoperability, and discovery. Use of standard data models facilitates a number of critical activities, such as research discovery and analysis, cross-site search, business intelligence, reporting, and visualizations. To realize this goal, data integration use cases must be identified so that ontology work can be performed. Implementation of ontology modules and tools for data ingest need to be created, and analysis of sufficiency must be evaluated. Data standards are necessarily best when they are developed by the community, for the community. To support a community-driven effort we need to identify contributors, train them, and identify funding to assist in the management of this data standardization cycle.

**Action 2C. Develop VIVO search for intra-institutional, cross-institutional and cross-platform use.** Many VIVO stakeholders and community members want multi-site search capabilities because it is essential to their ongoing community involvement. A beta version of VIVO Search (<http://vivosearch.org/>) developed in 2011 urgently needs updating. Action: Establish a series of focused task forces during early 2015 to review existing VIVO Search resources, clarify goals, define deliverables and a finite timeline, determine technical specifications, and solicit community participation and use cases.

**Action 2D. Attract and support projects that build on and extend the VIVO framework into new areas.** Promote adoption of the underlying VIVO semantic application platform and extend the VIVO-ISF ontology into new domains to broaden the utility of the VIVO approach in new academic, government, and research communities interested in producing and consuming linked data. Foster interoperability with other tools and platforms, such as Fedora 4 and Hydra, to better support the discovery sharing and attribution of datasets, improve impact tracking and assessment, and enhance data integration through ontologies and unique identifiers.

**Action 2E. Demonstrate commitment to open scholarship as a community through innovation and best practices.** Make data sharing a reality by promoting the re-use of VIVO data throughout our own institutions and in the wider scholarly community. Participate in conferences, workshops, and projects addressing priorities synergistic with VIVO community goals, taking a leadership role whenever possible and appropriate.

## Conclusions

The actions recommended in this plan outline an achievable path to a highly efficient VIVO open source project fostering deep, sustainable community engagement. Central among these recommendations is hiring a full-time technical lead to coordinate agile, community-driven processes that will grow VIVO participation and pay dividends in productivity and quality. As the installed base of VIVO users increases, we have the opportunity to promote VIVO membership in partnership with DuraSpace as the most effective way to marshal the financial and in-kind resources necessary to sustain and enhance VIVO and to realize its full potential in the international research community.