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The Evolution of VIVO Software

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DuraSpace.org
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Coalition for Networked Information
Fall 2014 Membership Meeting

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Overview

VIVO History

What problems does VIVO solve?

What is VIVO?

How does it work?

Searching VIVO

VIVO implementations

Evolution of VIVO:

grant-funded to open source, community

Governance

VIVO Community

VIVO Strategy & Future

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VIVO History: Rooted in Grant Funding

- VIVO development began at Cornell University in 2003 and was implemented locally in 2004
- During 2009-2012 a grant from the National Institutes of Health involving 7 institutions allowed significant expansion & development

Cornell University

UF UNIVERSITY of FLORIDA

Washington University in St. Louis SCHOOL OF MEDICINE

INDIANA UNIVERSITY

The Scripps Research Institute

Weill Cornell Medical College

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VIVO Addresses

Problems:

- Researchers struggle to identify collaborators across fields and outside of rigidly defined organizational confines
- Most information and data are highly distributed, difficult to access, re-use, & share, and is not standardized for interoperability

Solutions:

- VIVO can facilitate collaborations and communication, measure impact, collect data, determine performance, work in a wide variety of disciplines.
- VIVO stores disparate information and data in a single place, organizing it by VIVO-ISF ontology-based standards to facilitate reasoning and interoperability with other information systems and relevant schema.

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What is VIVO?

- An open-source, **semantic web application** that enables the management and discovery of research and scholarship across disciplines and institutions.
- Populated with **a wide variety of data**, e.g. **detailed profiles** of faculty and researchers; displaying items such as publications, teaching, service, professional affiliations, and other output.
- Provides **powerful search functionality** for locating people, information, and data.

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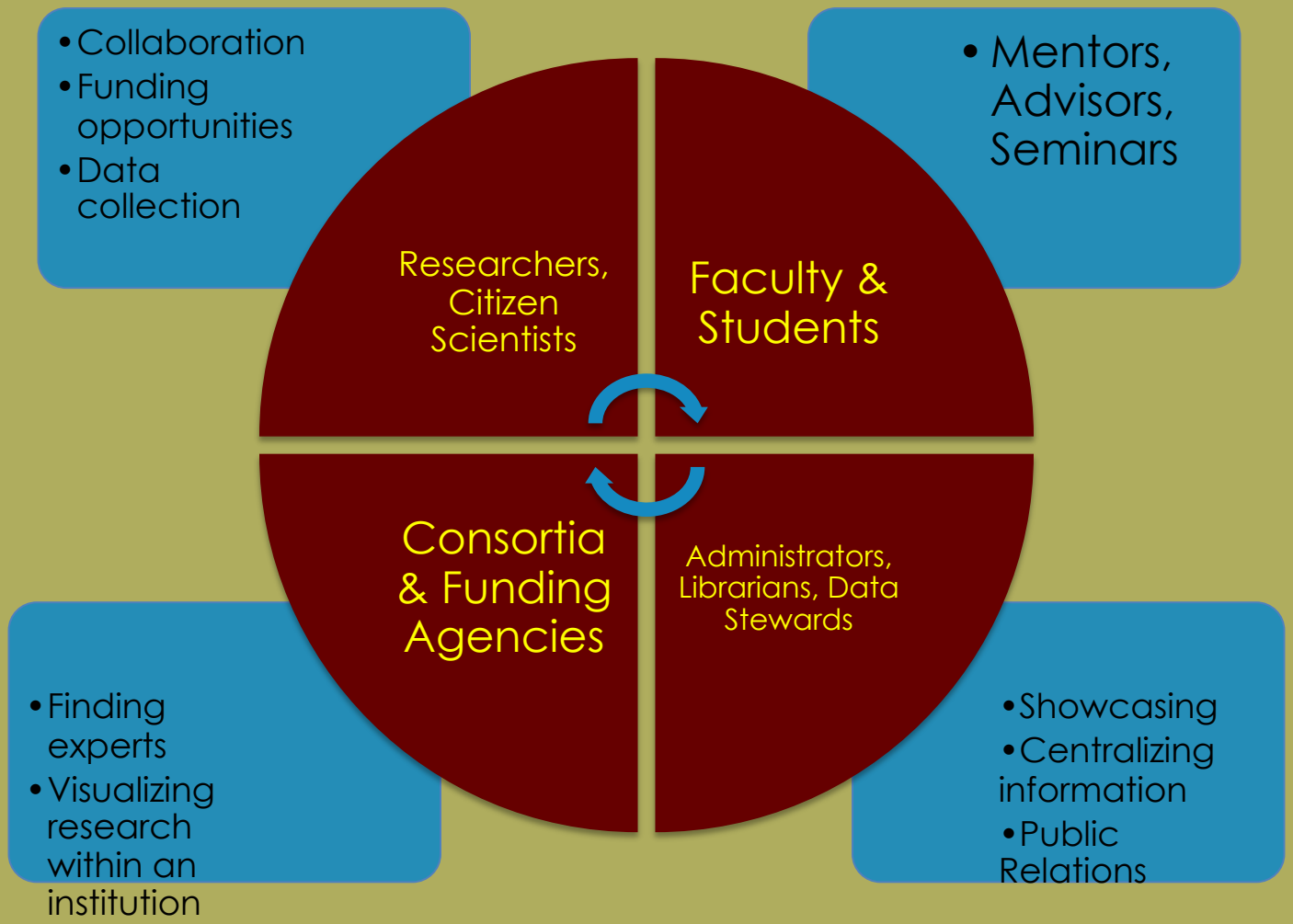
Who Uses VIVO?



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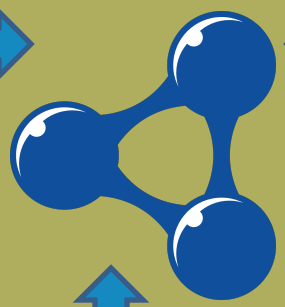
How Does VIVO Work?

VIVO harvests data from authoritative sources, thus reducing manual input, and providing access to integrated data sources.

Internal data sources HR, Grants, Courses, Works, Datasets, etc.



External data sources Publications, Patents, Standardized sources, Datasets, etc.

May be customized to meet individual and institutional needs

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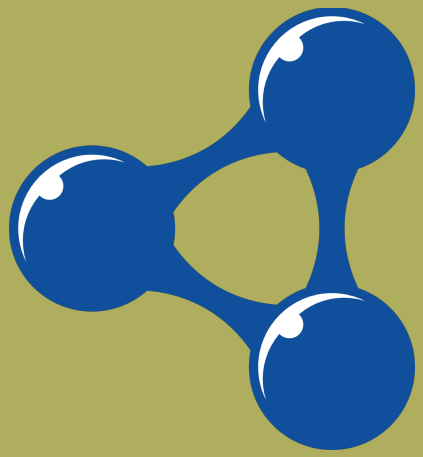
VIVO Data Are Stored As RDF



Resource Description Framework
RDF Data model is structured as a sequence:
subject-predicate-object
aka a "**triple**"
A triple store is normally synonymous with an RDF store

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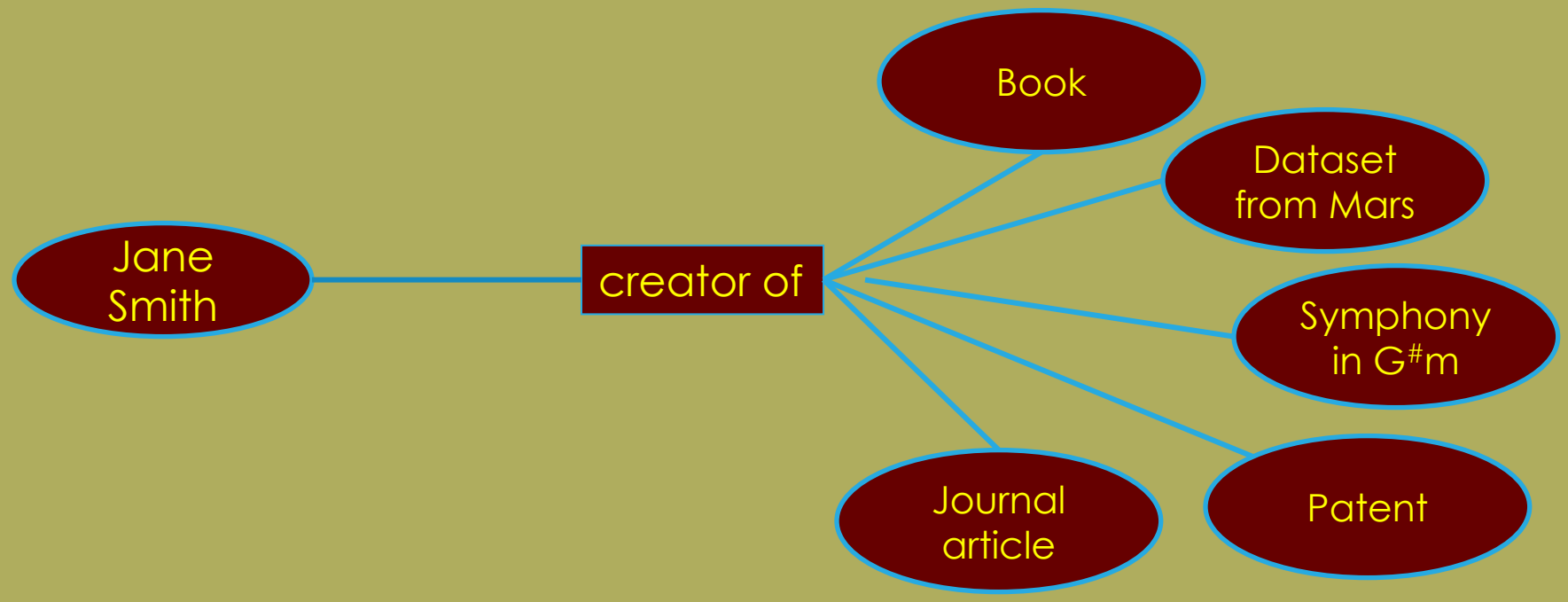
A Hypothetical set of Triples in VIVO



Subject Predicate Object

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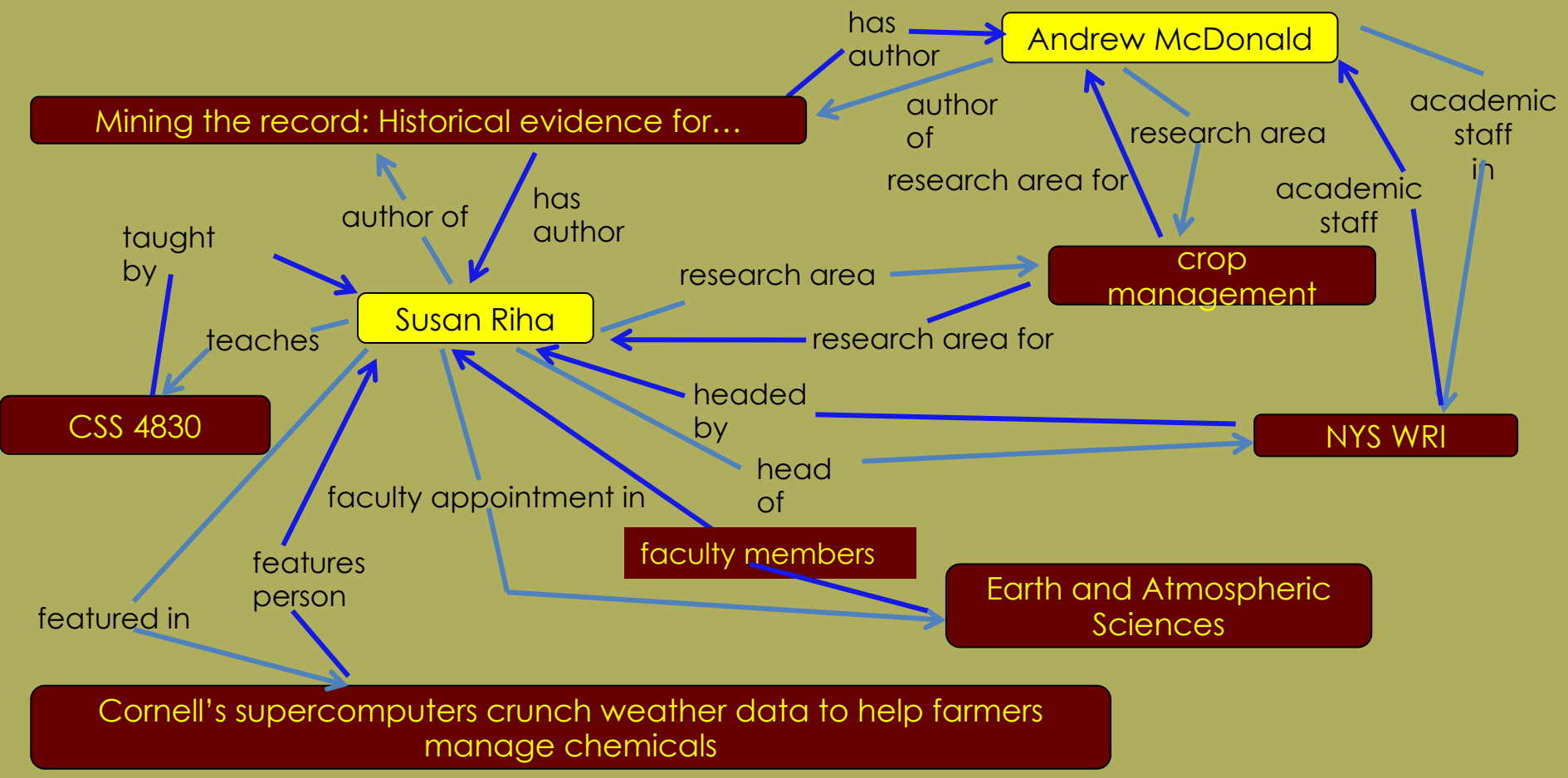
Myriads of Triples are Organized by the VIVO-ISF Ontology, Creating Relationships



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Triple Stores and Linked Open Data

- Provide ability to inference and reason
- Are machine readable
- Links into the open data cloud
- Provide links into a wide variety of information sources organized by many other interoperable ontologies
- Allow knowledge about research and researchers to be discovered

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VIVO Supports Search & Exploration

- By individual
  - Everything about an event, a grant, a person
- By type
  - Everything about a class of events, grants, or persons
- By relationship
  - Grants with PIs from different colleges or campuses
- By combinations and facets
  - Explore any publication, grant, or talk with a relationship to a concept or geographic location
  - Explore orthogonally (navigate a concept or geographic hierarchy)

Welcome to VIVO

The U.S. Department of Agriculture (USDA) provides leadership on food, agriculture, natural resources, rural development, nutrition, and related issues based on sound public policy, the best available science. USDA employs over 5,000 researchers to advance that science, and provides grants to many times that number of researchers outside the Department.

As research becomes more interdisciplinary, it can be hard to find collaborators outside your own area. USDA VIVO provides a powerful Web search tool for connecting researchers, research projects and outcomes, and others with relationships to the research. The idea is to link researchers with peers and potential collaborators. VIVO makes it possible to quickly identify scientific expertise to address a variety of food- and agriculture-related issues or to rapidly mobilize a response on a scientific issue.

USDA's Agricultural Research Service (ARS), Economic Research Service (ERS), National Institute of Food and Agriculture (NIFA), National Agricultural Statistics Service (NASS), and U.S. Forest Service (USFS) are the first five USDA agencies to participate in VIVO. The National Agricultural Library (NAL), part of ARS, hosts the USDA VIVO. All information contained in USDA's VIVO is public information.

Research

- Article (38,785)
- Journal (14,134)
- Patent (89)
- Report (82)
- Series (4,967)

Article

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

page 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 more...

'Anacostia' Camellia

'Apalachee' Pecan

'Betsy Ross', "Old Glory', and 'Declaration' Lilacs

'Billings' wheat combines early maturity, disease resistance, and desirable grain quality for the Southern Great Plains of the USA

'Ca. Liberibacter asiaticus' proteins orthologous with pSymA-encoded

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- With Candor and Humor, a Wide-Ranging Talk Between Rubenstein and Faculty
  DEC 05
- Shindell Testifies Before Congress On Benefits Of Reducing Short-Lived Climate Pollutants
  DEC 05
- Happy Birthday! Try Out Duke Gyms for Free
  DEC 05
- Duke in Pics: Employee Concert Kicks Off Holidays
  DEC 04

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Research Events

Industry Funded Clinical Research – Process for Contracts
DEC 08 | 9:00 AM

W3D Multi-resolution Microscopy and Novel Nanomaterials for Biological Interrogation

MOUNTAIN WEST RESEARCH CONSORTIUM

Cross-Consortium Search

Search

Institutional VIVO Sites:

ALASKA

University of Alaska, Anchorage
University of Alaska, Fairbanks

HAWAII

University of Hawaii (RTRN Profiles)
University of Hawaii (VIVO)

IDAHO

Boise State University
Idaho State University
University of Idaho

MONTANA

Montana State University
University of Montana

NEVADA

University of Nevada, Las Vegas
University of Nevada, Reno

NEW MEXICO

New Mexico State University
University of New Mexico

WYOMING

University of Wyoming

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DEEP CARBON OBSERVATORY DATA PORTAL

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Welcome to DCO Data Portal

Welcome to the Deep Carbon Observatory Digital Object Registry ("DCO-VIVO"), a centrally-managed digital object identification, object registration and metadata management service for the DCO Data Portal. The DCO Data Portal provides the digital object registration process for DCO Community members. Digital object registration includes DCO-ID generation based on the global Handle System infrastructure and metadata collection using VIVO. Where appropriate, users will be linked into the DCO Data Repository for data deposit as required. DCO-VIVO is maintained by the DCO Data Science Team at the Tetherless World Constellation of Rensselaer Polytechnic Institute. DCO-VIVO is an instance of Version 1.5.2 of the VIVO open source platform.

Research

- 815 Academic Articles
- 48 Books
- 27 Book Chapters
- 6 Book Series

Faculty

Saitta, A. Marco
Professor

D'Hondt, Steven
Professor

Menez, Benedicte

Departments

- Institute of Earth Sciences, Academia Sinica
- Department of Terrestrial Magnetism
- Lehigh University
- CNRS, IMPMC Paris
- Department of Geology and

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VIVO: at the Center of Various Projects

- Linked Data for Libraries (LD4L; Cornell, Stanford, Harvard)
- EarthCube
- New York State Climate Change
- Laboratory of Atmospheric and Space Physics
- The Smithsonian Institute
- The Clinical and Translational Science Consortium
- SURA, the Southeastern Universities Research Association

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The installed base of VIVO implementations has remained somewhat level during the evolutionary period (2012-present), yet new and interesting ways to use VIVO continues to expand

From yesterday's Opening Plenary Session

I tweeted: ***@Tom Cramer open communities-"look outside the gates" for growth @vivocollab #cni14f***

A community CANNOT afford to be insular & exclusive!

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VIVO Evolution

- From grant-funding -> open source
- In 2012-2013, VIVO developed its partnership with DuraSpace
- Currently DuraSpace assists VIVO in the evolution to an open source, community-based project – providing infrastructure & services – legal, tax, marketing, communications, leadership, training, fundraising platforms
- VIVO is sustained through a community membership model

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Major Accomplishments in 2014

1. VIVO Project Director is Hired – May 1
   - A few words about that:
     - Collaborative Life Scientist / Lotus Notes / Plumtree Portal / Harvard Profiles at U Minn / SciVal Experts at U Minn / past involvement in the VIVO community
   - Primary responsibilities of the Project Director
     - Oversee operations; Oversee software projects; Community Management; Marketing and communications; Provide Strategic Vision

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Successful Evolution Depends on a Collaborative VIVO Project Director

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Four Major Accomplishments in 2014

1. VIVO Project Director is Hired – May 1
2. VIVO Governance Model is Developed; VIVO Charter is Adopted
3. DuraSpace Membership Model Fully Launched
4. VIVO Strategic Planning for 2015-2016 Commences

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Community development isn't about software, it's about governance, engagement, the 'business model', etc.

James Hilton, #cni14f

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Charter Process

- Began before I came aboard
- Jonathan Markow & Steering Group
- Based on DuraSpace model - for consistency across products – important for managing institutions using multiple DuraSpace products
- Steering Group finalized Draft Charter June, 2014
- Circulated to Leadership Group for comment
- Finalized in late July, 2014

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VIVO Governance

Establishes principles and goals for the project; ensures a strategic direction and product roadmap, accountability, a sustainability plan; relies on a management decision framework as a means of conducting operations

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Governance & Elements of the VIVO Charter

- Mission, Vision, Overarching Goals
- DuraSpace Membership Model & Benefits
- Governance Template
- VIVO Benefits, Governance Roles, & VIVO Community
- Sustainability; representative government, key salaried staff, DuraSpace Services, Registered Service Provider

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VIVO Governance Organization

Leadership Group

Steering Group

Management Team

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VIVO Governance Organization

Leadership Group – Comprised of top financial and in-kind supporters – meet f2f 1x yearly – qtrly via telecom – makes key decisions

Steering Group – Appointed by Leadership Group – meets weekly via telecom – sets direction, oversees operations

Management Team – comprised of work group leads and provides operational management

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VIVO Governance Template

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VIVO Working Groups

1. **Development & Implementation**: weekly WebEx; vivo-dev list
2. **Applications & Tools:** bi-weekly WebEx; info sharing; theme-based
3. **VIVO-ISF Ontology:** once monthly; or weekly ontology open office hours; vivo-ontology list
4. **Community Engagement & Outreach;** reconstitution, evolving leadership;

- Working Group Leads meet bi-weekly – led by Project Director - raise issues to Steering Group

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VIVO's Governance Model is Pretty Straightforward, Yet…

- Some community members feel confused by it & say it "impedes getting work done"
- Some say there are too many working groups – others say there aren't enough
- *Is confusion the by product of a community whose members are simply too busy to take time to learn the model?*
- All concerns are respected. Bottom line – work needs to get done!

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Or simply, as stated by one (or more) of the conversationalists during yesterday's Opening Plenary:

- "organize labor for the outcome"
- "*tune*" your community source model
- advance your code and be transparent
- be an inclusive community
- invest time and resources to be transformational

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DuraSpace Membership Model

Membership Level	Annual Fee
Bronze	$2,500*
Silver	$5,000
Gold	$10,000
Platinum	$20,000+
Corporate Sponsorship	Various Levels

*$250 for developing nations

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DuraSpace Membership Benefits

- According to level of support, governance role and project influence increases
- Platinum members, Investor Corporate Sponsors serve on Leadership Group to provide project direction
- First year of roll out for the membership model & VIVO
- Generally a high level of interest & excitement in the community

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VIVO Strategic Planning

- 14-Member VIVO Strategy Group Created in Fall, 2014; from Leadership, Steering, Management Team, external organizations
- Met last Monday & Tuesday, December 1 & 2 at Northwestern University, Evanston, IL

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Survey Prior to Meeting to Determine Current State

- 3 Questions – sent to 41 VIVO Leaders; 20 respondents; 181 unique responses
  - What do you think the value proposition is for VIVO?
  - What do you see as VIVO's top goals in the next 2-3 years?
  - What do you think are the key issues and challenges for VIVO that need to be addressed in the next 2-3 years?

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VIVO's 3 Strategic Themes

- Community
- Sustainability
- Technology

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Survey Responses Categorized by Strategic Theme

- Redundant responses aggregated
- Responses translated to goals by strategic theme
- VIVO Strategy Group Discussed Goals f2f
- Each Strategy Group Member were permitted to vote for 3 goals per theme
- 5 Top Goals for each theme selected

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VIVO Community Key Goals 2015-2016

Community
Increase productivity
Develop a more transparent governance
Increase the number of engaged contributors
Maintain a current and dynamic web presence
Develop goals for partnerships (ORCID, CRIS, CASRAI,W3C, SciEnCV, CRediT, etc.)

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VIVO Sustainability Key Goals 2015-2016

Sustainability
Create a welcoming open source community
Develop clear value proposition
Establish road map
Increase adoption
Promote the value membership

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VIVO Technology Key Goals 2015-2016

Technology
Develop democratic code processes
Clarify core architecture and processes
Develop VIVO search
Improve/increase core modularity
Institute team-based development and release processes

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VIVO Strategy Planning - Highlights

- Increase community productivity through simplified work group models that engage more of the community
- Develop clear goals about working with our partners: ORCID, CASRAI, CRIS, W3C, SciEnCV
- Establish a welcoming community
- Create a roadmap, increase adoption
- Engage a Technical Lead
- VIVO Search, Core Modularity

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Next Steps

- Finalize Action Plans
- Develop detailed Strategic Plan
- Solicit Leadership Group and Governance input
- Focus on need for technical lead
- Continue evolving towards being an inclusive, self-sustaining community

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VIVO Challenges

- Development community – increase the number of developers
- Community engagement – get serious about this work – it's key to VIVO's future
- Membership – become more aggressive
- DuraSpace – take advantage of economies of scale / Fedora 4 Development and integration opportunities for VIVO
- Let go of things from the past that prohibit inclusive growth and development

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VIVO Opportunities

- Community Engagement of users outside the gates
- Energetic support of hackathons, i-fest at Oregon Health and Science University March 16-17 in Portland
- VIVO Annual meeting – August 12-14, 2015, Cambridge, MA
- Committed Leadership, Members, and Partners
- We're working towards a formal Strategy!

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The Future

- Continue development of core VIVO, offer modularity, enhance features, simplify upgrades, coordinate with ontology development
- Continue to grow the community through increased marketing and communication of value, activities, needs
- Enhance partnership activities to leverage growth
- Tap European Market – lots of existing VIVO users but loosely associated

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Special Thanks to:

- Dean Krafft - Cornell
- Jonathan Markow / Michele Kimpton and my other fellow DuraSpacers
- The VIVO Steering Group & Working Group Leads
- Jon Corson-Rikert - Cornell
- Mike Wright – NCAR

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6th Annual VIVO Conference
Boston, MA
August 12-14, 2015
vivoconference.org

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