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Agents of Integration in a Complex Information Environment

Janet McCue
Cornell University

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Agents of Integration in a Complex Information Environment

Janet McCue
Associate University Librarian for Teaching, Research, Outreach, and Learning Services
I’ve often noticed on entering a public library, men and women, and especially our youth, gazing intently on the catalogue trying to clear the mysticism which surrounded it. Again and again have I noticed several walk away in disgust, unable to solve the puzzle....”

(St. Louis Republic, 1890)
Agents of Integration:
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Medha Devare
Bioinformatics & Life Sciences Librarian
VIVO:

• Provides an integrated view of research & expertise across Cornell;

• Helps faculty, administrators, and students discover common interests and connections;

• Allows Cornell to transcend the campus, dept, and administrative structures
VIVO as harvestor: Content sources

Riha, Susan Jean
Director New York State Water

I am a professor in the department of Earth and Atmospheric Sciences, and joined the Cornell faculty in 1988. At that time, I was appointed the Charles L. Pack Research Professor of Forest Soils. My research interests are in the area of the interaction of plants with their physical environment and in dynamic simulation modeling. I work on both environmental and plant production problems on the state, national and international levels. I am a member of the graduate fields of Soil and Crop Sciences and of International Agriculture.

Annual faculty reporting

OHR – appointment

Research and scholarship focus
My research program addresses the dynamic interactions of plants with their physical environment. The general approach has been to use biophysical models to analyze experimental data collected as part of growth chamber, greenhouse and field studies. The studies undertaken have contributed to our understanding of the impact of flooding on plant water relations, the impact of soil drying on plant growth and water use, and the importance of different surfaces to vapor transport under various crop, forestry and agroforestry systems. The process of utilizing biophysical models to analyze experimental data has in turn laid the groundwork for me to use plant-environment simulation models to address a number of applied problems. These include such issues as the response of agriculture to climate change, the impact of climate variability on crop yield, improving the use of stored soil water by crops growing in a semi-arid environment, devising drought stress indicators for forest productivity and biodiversity, and altering water use in agroforestry systems. As my research program centers on soil-plant-atmosphere systems and involves both modeling and experimental work, the studies often cross boundaries between more traditional areas of research (for example, soil physics and plant physiology; or agronomy and forestry) and research methodologies (experimental and theoretical).
VIVO: The way it works:

- Uses an entity-relationship model to organize & present information on people, research, & educational activities;
- Leverages concepts & standards from the semantic web community to provide seamless access to diverse resources;
- Supplements the discovery power of search engines by presenting each displayed page in a context of related information.
- Records each piece of data as a triple with a subject, predicate, and object.
- Assigns a unique address to each piece of data.
Relationships in VIVO

- Andrew McDonald
  - has author
  - research area for
  - academic staff

- Susan Riha
  - author of
  - research area
  - taught by
  - teaches
  - crop management

- CSS 4830
  - faculty appointment in
  - features

- NYS WRI
  - head of
  - Earth and Atmospheric Sciences

- Cornell’s supercomputers crunch weather data to help farmers manage chemicals
Graduate programs at Cornell are organized by Fields. The first step in applying is identifying a Field that best matches your academic goals.

With over 30 Fields to choose from in the Life Sciences, let’s narrow it down by selecting a broad interest...

- applied biology
- biomedical sciences
- ecology, evolution, and integrative biology
- genetics, genomics, and bioinformatics
- molecular and cellular biology
- physical, chemical, and computational biology

...or see the full list of Fields instead

Already determined which Field is right for you? 

Apply Now
VIVOweb: Enabling a National Network of Scientists

- Awarded $12M NIH grant to help improve biomedical research by creating a national network of scientists;
- Involves seven institutions and thousands of researchers;
- Goals include:
  - developing tools to improve collaboration and foster team science;
  - improving visibility (accuracy, currency, breadth) of information about science;
  - forging collaborations that can lead to new discoveries
Animated co-authorship network
Agent of Integration

Gail Steinhart
Research Data & Environmental Sciences Librarian
Welcome to DataStaR, a Data Staging Repository hosted by Albert R. Mann Library at Cornell University.

The purpose of DataStaR is to support collaboration and data sharing among researchers during the research process, and to promote publishing or archiving data and high-quality metadata to discipline-specific data centers, and/or to Cornell's own digital repository (eCommons@Cornell). Read more about DataStaR.

Are you a Cornell researcher with data you'd like to share with collaborators, or make publicly available? Contact us.
DataStaR

- Provides the environment & services to support data sharing among scientists;
- Focuses on small and medium-sized data sets;
- Helps package completed research data for publication in domain-specific or institutional repositories;
- Offers new partnerships between locally-based service providers (e.g. academic libraries) and external data centers
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Leah Solla
Coordinator of Physical Sciences Library & Chemistry Librarian
"In the spring I am teaching a class that I will include a component on access to astronomy research resources like ADS, online catalogs and the virtual observatory. One end of this is clearly a traditional library service - access to the literature, but the boundary between the published literature, partly digested data and the raw astronomical data has become very diffuse over the last few years.

If you have some time next week, I'd like to get together to discuss how this all fits into the future virtual physical sciences library, and how to integrate that into my class."

(Astronomy Professor, 2010)
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Dianne Dietrich
Physics & Astronomy Librarian
“There is an opportunity here for the Cornell library to take a leadership position in this area of great importance to the field of astronomy and the future of the astronomy department.”

(Astronomy Professor, 2010)
• Understanding the needs—both current and projected—of faculty & research groups;
• Developing a plan for the enhancement of the infrastructure & resources;
• Facilitating collaborations among research groups;
• Fostering cross-disciplinary analysis of data using an array of data mining and visualization tools;
• Developing pilot projects & identifying the specifications and business models
Jim Gray’s Science Paradigms:

- **Empirical** -- described phenomena
- **Theoretical** -- used models & generalizations
- **Computational** -- characterized by simulations
- **Data Exploration** -- allows us to unify theory, experimentation & simulation

(1944-2007)
Where do librarians fit into this e-science universe?

a. Some reports suggest potential roles for libraries and library professionals

a. Other reports fail to mention libraries

b. Other reports ask who is taking responsibility.
“Librarianship offers a better field for mental gymnastics than any other profession.”

/Library Journal, 1890/
Selected Readings


Devare, Medha et al. “VIVO: Connecting People, creating a Virtual Life Sciences Community,” *D-Lib* (v. 13 #7/8) [http://www.dlib.org/dlib/july07/devare/07devare.html](http://www.dlib.org/dlib/july07/devare/07devare.html)


Questions
RDF characteristics

• simple data model for representing WWW info

• XML-based

• allows anyone to make statements about any resource

• based on “triples”:

Subject  [Susan Riha]  Predicate  [head of]  Object  [NYS WRI]

From: http://www.w3.org/TR/rdf-concepts/