

Measuring the Results of Science Investments

Julia Lane

Overview

- Why good measurement matters
- Why measurement is hard to do
- Designing a better system: the nascent approach in the US
 - The vision
 - What has been done
 - The pitfalls
- What might be done internationally

Why good measurement matters

Good measurement matters because
it's the right thing to do



Good measurement matters because Stakeholders demand it



NEWS FEATURE NATURE vol. 465/10 June 2010

The illustration depicts a hand holding several coins, symbolizing investment or funding. In the center, a flask contains a vibrant green liquid, representing scientific research. To the right, a plant with green leaves and dollar signs grows out of a flask that has a large question mark on it, suggesting the uncertainty or risk associated with scientific investment.

What science is really worth

Spending on science is one of the best ways to generate jobs and economic growth, say research advocates. But as **Colin Macilwain** reports, the evidence behind such claims is patchy.

Good measurement matters because

The alternative is worse



Why good measurement is hard to do

The conceptual framework is complex

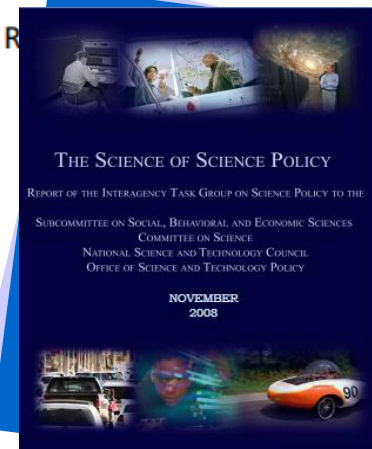
- Production function framework great for aggregate impacts
 - source of result that more than 3/4 of post-1995 increase in productivity growth can be traced to science investments
- At micro level not so clear
 - Discovery – innovation highly nonlinear
 - Unit of analysis
 - Input measures
 - Dependent on organizational systems
- Outcome measures
 - Scientific; Economic; Social
- Fundamental challenge: Establishing counterfactuals
 - Selection bias
 - Random assignment not an option

And the data don't exist

The ITG undertook a literature review to determine the state of the science to date. A questionnaire was also circulated to Federal agencies to ascertain what methods are currently in use for programmatic investment decision making, as well as to ask what tools and resources are needed by Federal agencies that are currently unavailable. The ITG found that:

- There is a well developed body of social science knowledge that could be readily applied to the study of science and innovation.
- Although many Federal agencies have their own communities of practice, the collection and analysis of data about the science and scientific communities they support is heterogeneous and unsystematic.
- Agencies are using very different models, data and tools to understand their investments in science and technology.
- The data infrastructure is inadequate for decision-making.

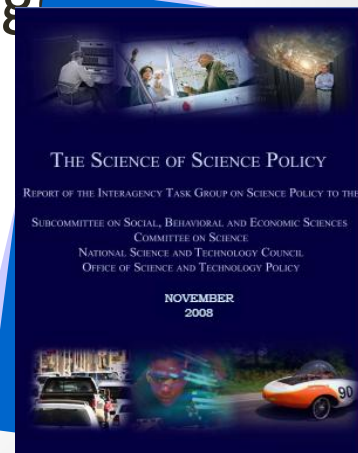
THE SCIENCE OF SCIENCE POLICY: A FEDERAL RESEARCH R



The data don't exist for good reason

- No systematic documentation of inputs (who is supported by science funding)
- No systematic links between inputs and outputs
- Heavy reliance on manual reporting
- No systematic ability to capture outputs and outcomes beyond the period of an award
- Balkanized agency systems => impossible to get overview of science investments

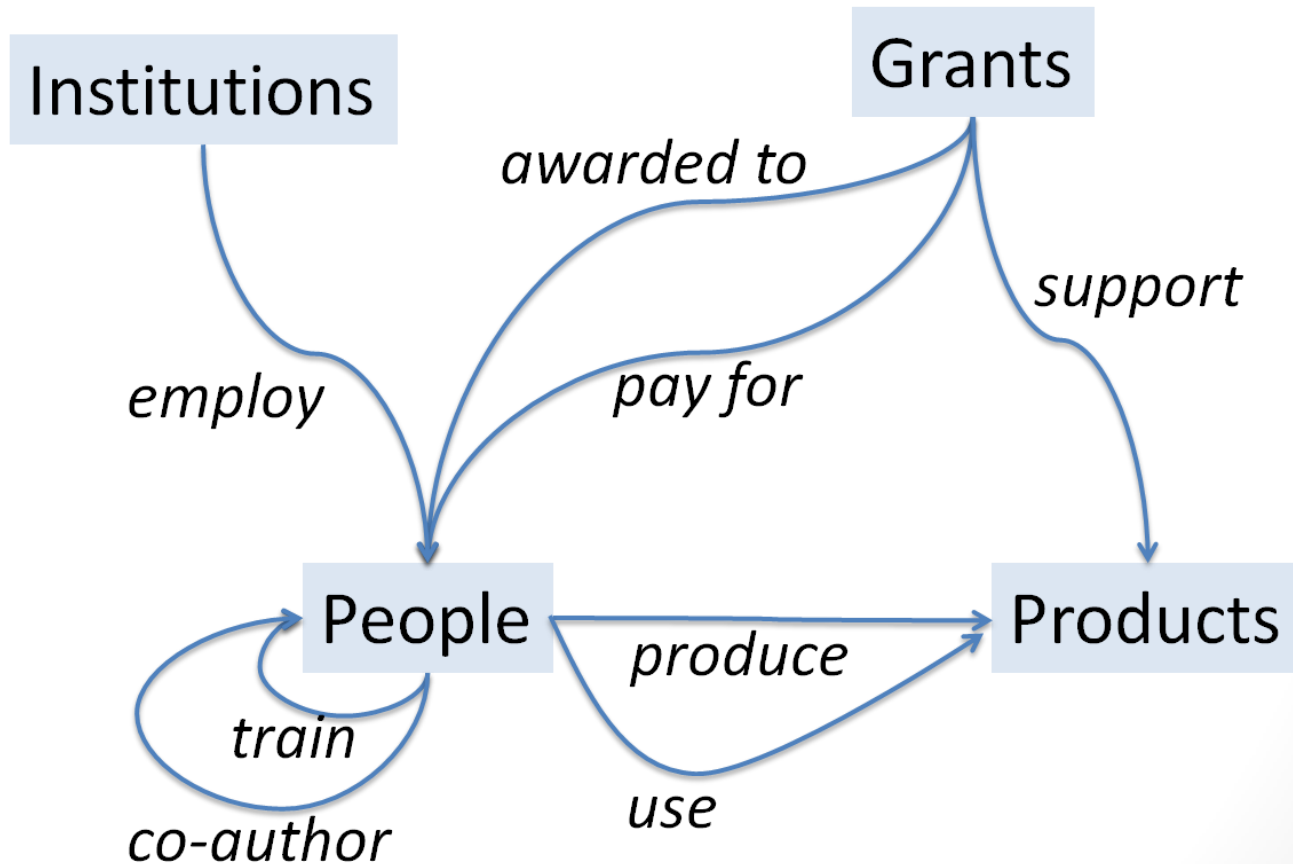
=> **The data infrastructure is inadequate for decision-making**



Designing a better system

What is needed

Automatically capture data about the conduct of science – inputs, outputs and the connections between the two



Designing a better system: based on collaboration

OnTheMap

[LED Home](#) [Help and Documentation](#) [Reload](#) [Text-Only](#)

Start Base Map Selection Results

Work Area Profile Analysis

enter your own subtitle

Characteristic Filter

Year

Map Controls

Color Key

Thermal Overlay

Point Overlay

Selection Outline

Identify

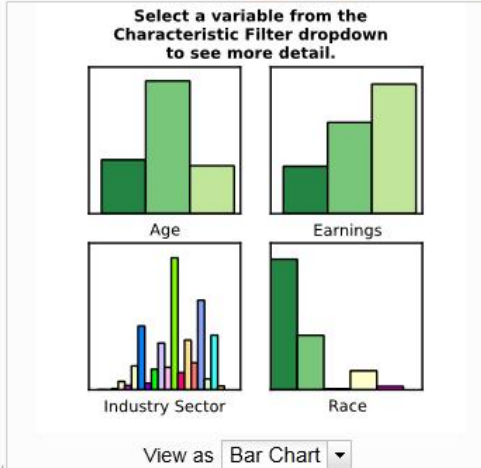
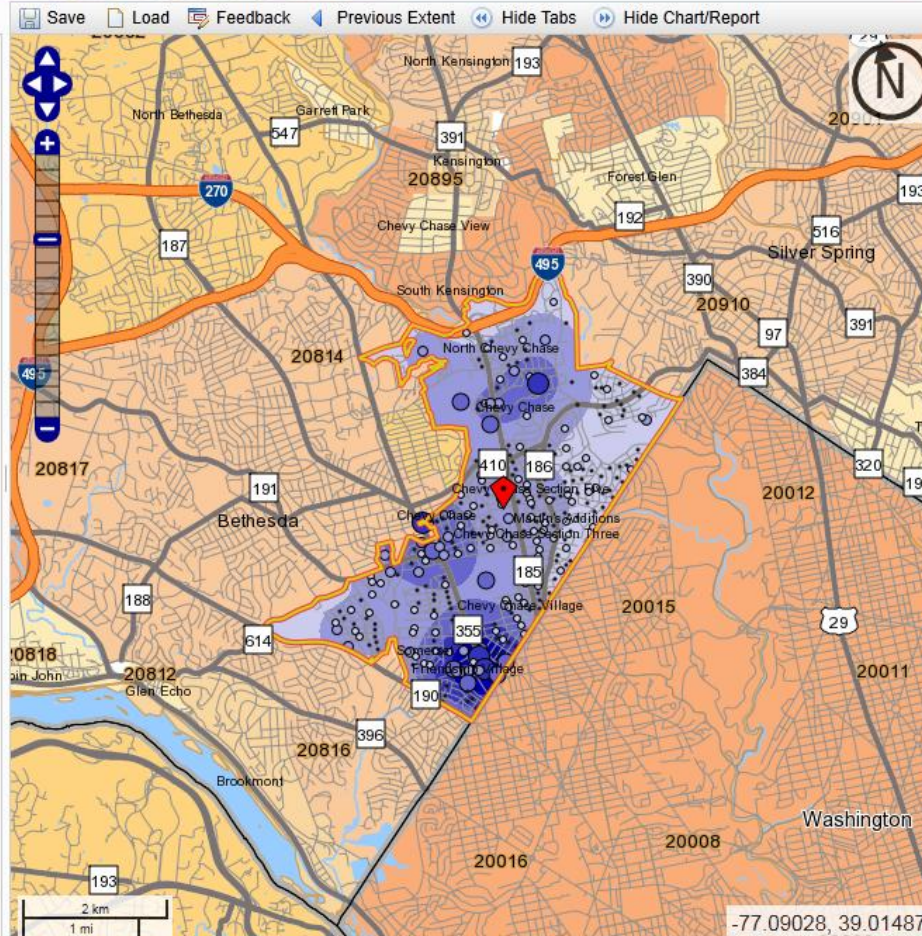
Clear Overlays

Report/Map Outputs

Legends

- 5 - 507 Jobs/Sq.Mile
- 508 - 2,016 Jobs/Sq.Mile
- 2,017 - 4,530 Jobs/Sq.Mile
- 4,531 - 8,049 Jobs/Sq.Mile
- 8,050 - 12,574 Jobs/Sq.Mile

- 1 - 4 Jobs
- 5 - 53 Jobs
- 54 - 264 Jobs



Total Primary Jobs

	2009	
	Count	Share
Total Primary Jobs	12,805	100.0%
Total Primary Jobs	12,805	100.0%

Designing a better system: based on science

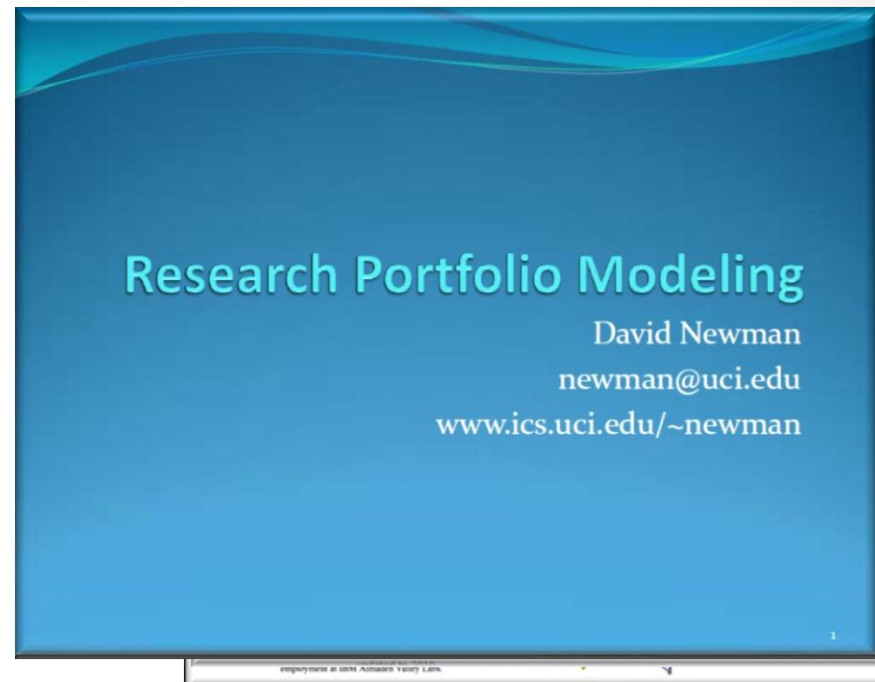
Patent Network Dataverse Lee Fleming Harvard

<http://dvn.iq.harvard.edu/dvn/dv/patent>

COMETS (Connecting Outcome Measures in Entrepreneurship
Technology and Science): Lynne Zucker and Michael Darby UCLA

<http://www.kauffman.org/comets>

Topic Modeling: David Newman UCI



Designing a better system: based on eScience

Use new cybertools e.g. use topic modelling and natural language processing to process massive amounts of text

Use new ways of structuring data e.g. graph databases

Use new approaches to link individuals with output e.g. webscraping

The image shows a Google Scholar profile for Julia Lane, a National Science Foundation researcher. The profile includes a header with her name and affiliation, a search bar, and navigation links. Below the header, there are two charts: 'Citation indices' and 'Citations to my articles'. The 'Citation indices' chart shows a table with columns for Citations, h-index, and i10-index, with values for 'All' and 'Since 2005'. The 'Citations to my articles' chart is a bar graph showing the number of citations from 1990 to 2011. Below the charts is a table of articles cited by the user, with columns for 'Title / Author', 'Cited by', and 'Year'. The table lists several articles, including 'Job flows, worker flows, and churning' and 'Productivity differences across employers: The roles of employer size, age, and human capital'. To the right of the article list, there are sections for 'Co-authors' and 'Suggested co-authors', each with a search bar and a list of names.

Citation indices	All	Since 2005
Citations	2576	1643
h-index	26	20
i10-index	57	39

Title / Author	Cited by	Year
Job flows, worker flows, and churning B. Burgels, J. Lane, O. Stevens Journal of Labor Economics 18 (3), 473	258	2000
Productivity differences across employers: The roles of employer size, age, and human capital J.C. Haltiwanger, J. Lane, J.R. Spletzer The American Economic Review 89 (2), 94-98	209	1999
Confidentiality, disclosure, and data access: theory and practical applications for statistical agencies P. Doyle, J. Lane, J.M. Trethewey, L.V. Zayatz Elsevier Science	139	2001
Wages, productivity, and the dynamic interaction of businesses and workers J.C. Haltiwanger, J. Lane, J.R. Spletzer Labour Economics 14 (3), 575-602	136	2007
Moving up or moving on: who advances in the low-wage labor market? P. Anderson, H.J. Holzer, J. Lane Russell Sage Foundation Publications	117	2005
Integrated longitudinal employer-employee data for the United States J.M. Abowd, J. Haltiwanger, J. Lane The American Economic Review 94 (2), 224-229	88	2004
The creation and analysis of employer-employee matched data J.C. Haltiwanger, J.M. Trethewey, J. Lane Nona 241	73	1999
Economic turbulence: is a volatile economy good for America? C. Brown, J.C. Haltiwanger, J. Lane University of Chicago Press	71	2005
The relation among human capital, productivity, and market value: Building up from micro evidence J.M. Abowd, J. Haltiwanger, R. Jarmin, J. Lane, P. Lengermann, K. McCue, K. McKinney Measuring capital in the new economy, 153-204	60	2005

The Nascent System in the U.S.

- The vision
- What is being done
- The pitfalls

The vision

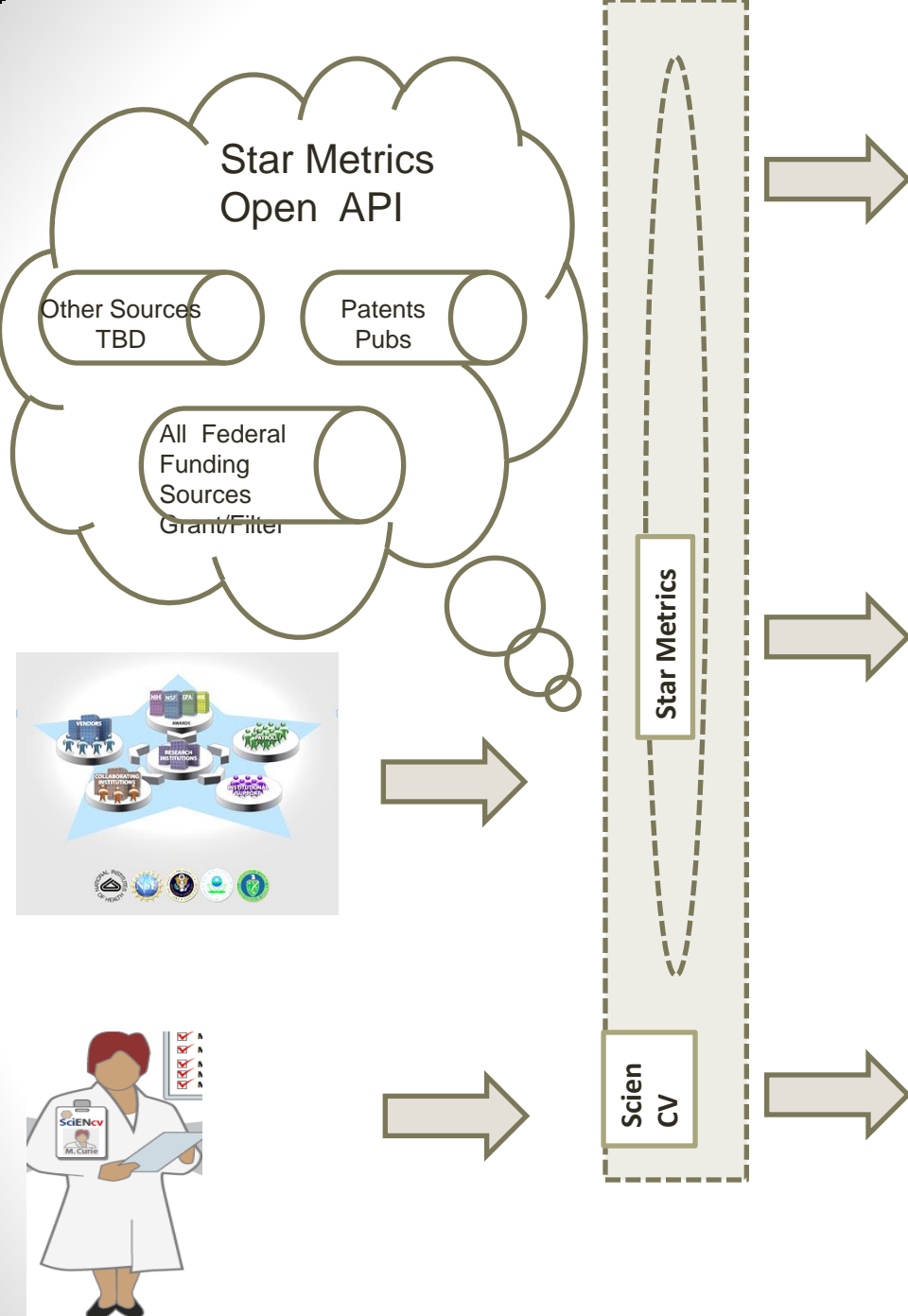
- **Level I:** Who is employed by science funding?
 - Current jobs
 - Future workforce
- **Level II:** What are the results of science?
 - scientific knowledge (such as publications and citations..)
 - economic growth (through patents, firm start ups and other measures...)
 - workforce outcomes (through student mobility and employment..)
 - social outcomes (such as health and environment...)

What has been done: STAR METRICS



Voluntary partnership between science agencies and research institutions to document the outcomes of science investments to the public

- OSTP initiative partnering with NIH, NSF, DOE and EPA; USDA has agreed to join.
- 85 research institutions participating - ~ 50 % of NSF and NIH portfolio



Agency, Institution and Public Portfolio Explorer

STAR METRICS Portfolio Explorer

Home | Portfolio | Expertise | Topics | Maps

Select Divisions: (2 of 23) CHE, PHY
PCF Codes: (1,234 of 1,234) All

Timing: 2005 - 2010
Proposals: Awarded, Declined, Other

Topics Filter: 6 of 145 selected: 1299: reaction bond catalyst | 1763: NMR spectrometer instrument | 1704: calculation bond molecule | 1914: mass spectrometry mass two others

Include proposals for selected Topics. Use the Summary sidebar to explore your selection.

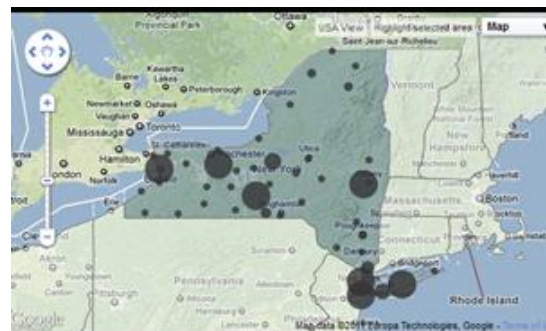
Topic Descriptions | Topic Data | Keyword Filter

Topic Descriptions: 1213 three word label - synthesis reaction organic synthetic chiral chemistry_program compound organic_macro-molecular molecules | 1316 another label here | 1316 - 1726: this topic's description | 9% - 1437: short label here | 1316 another label here - metal complexes ligand inorganic chemistry bond compound inorganic transition_metal | 3% - 1245: name of topic | 2% - 1362: label for topic

Quick Selection Summary

Total Funding: \$ xx,xxxM
Highest Values (Funding/Awards):
Div's: DRV1 - \$ (697) | DRV2 - \$ (697) | DRV3 - \$ (697) | 1213 - \$ (697) | 1214 - \$ (697) | 1215 - \$ (697) | 1216 - \$ (697)
PCF's: P2345 - \$ (697)

R&D Dashboard



SciENCv

STAR METRICS Portfolio Explorer

Home | Portfolio | Expertise | Topics | Maps

My Page

Items of Interest:

Active Grants: of Interest

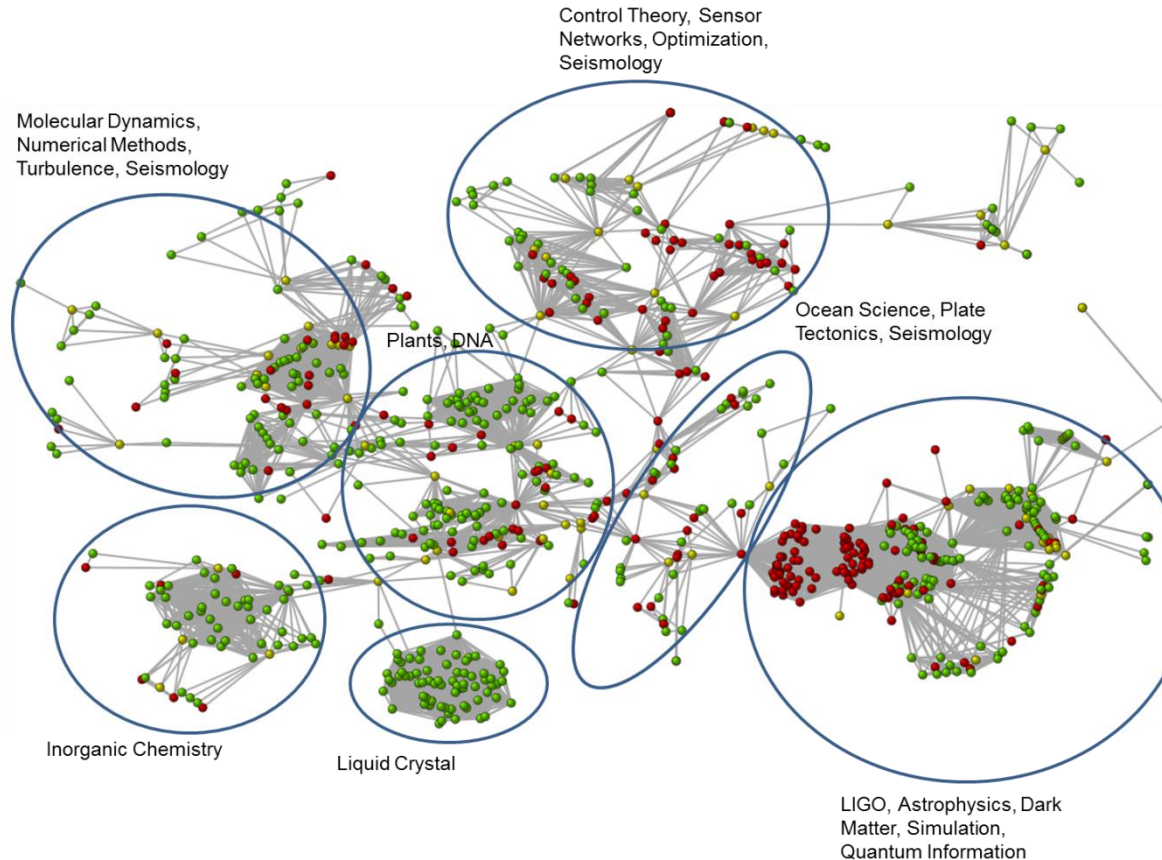
[3P50ES012736-05S2 0001 Toxic Harmful Algal Blooms \(HABs\)](#) PI: BRAND, LARRY E

[SR01HD033554-11 Population and Environment in the U.S. Great Plains](#) PI: LEONARD, SUSAN HAUTANIEMI

[3P50ES012736-05S2 0003 Recreational microbes: indicators for monitoring water quality](#) PI: SOLO-GABRIELE, HELENA

Level I: Who is Supported by Science Funding

- Automated reporting from financial systems
- Documenting jobs
- And training

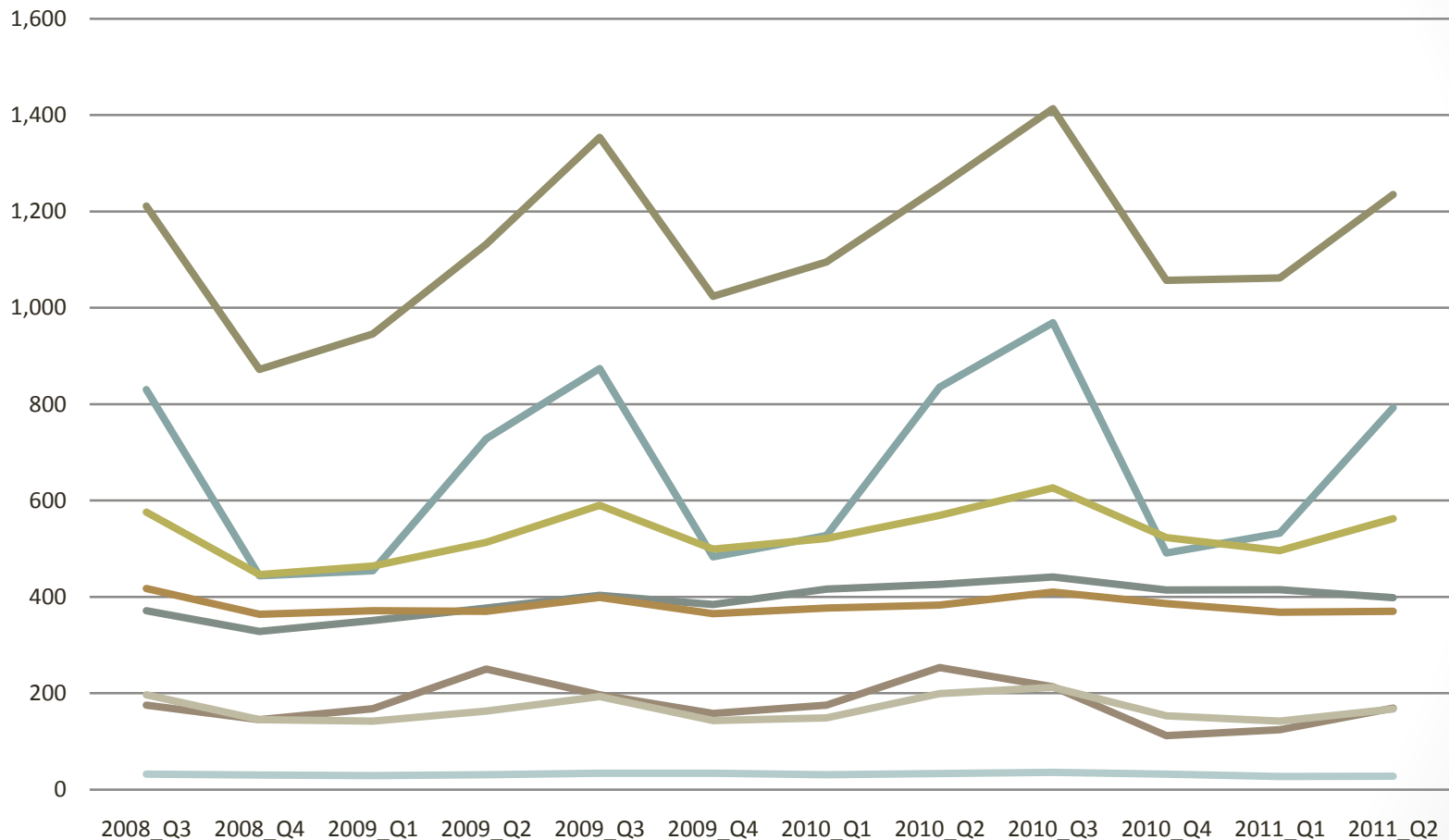


Science as an export industry

Number of active Federal science awards	1,447
<u>Jobs</u>	
Direct Payroll FTEs	
Counts	2,143.7
Direct Payroll Individuals	
Counts	7,444
Direct Jobs through Vendors, Sub-Award Recipients, Institutional Support	
Counts	2,029.2

Jobs at all levels

Occupations Directly Supported by Science Funding at RFSUNY

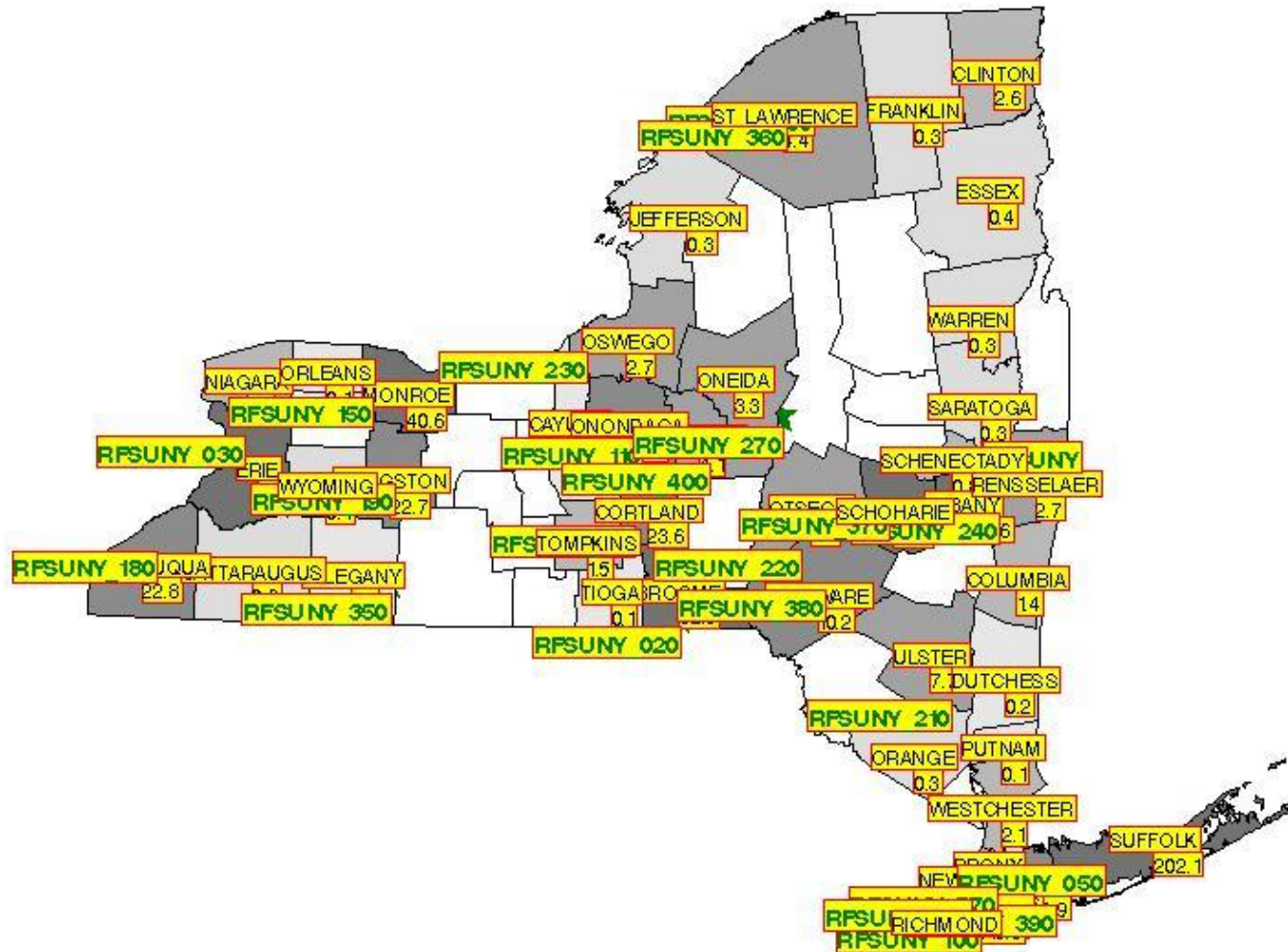


- Grad Student
- Faculty
- Post Graduate Researcher
- Technician/Staff Scientist
- Research Analyst/Coordinator
- Undergrad
- Research Support
- Clinicians

Jobs across the state

Local Economic Impact

for The Research Foundation of State University of New York
Direct Jobs through Vendor, Subawards, Subcontracts, Institutional Support

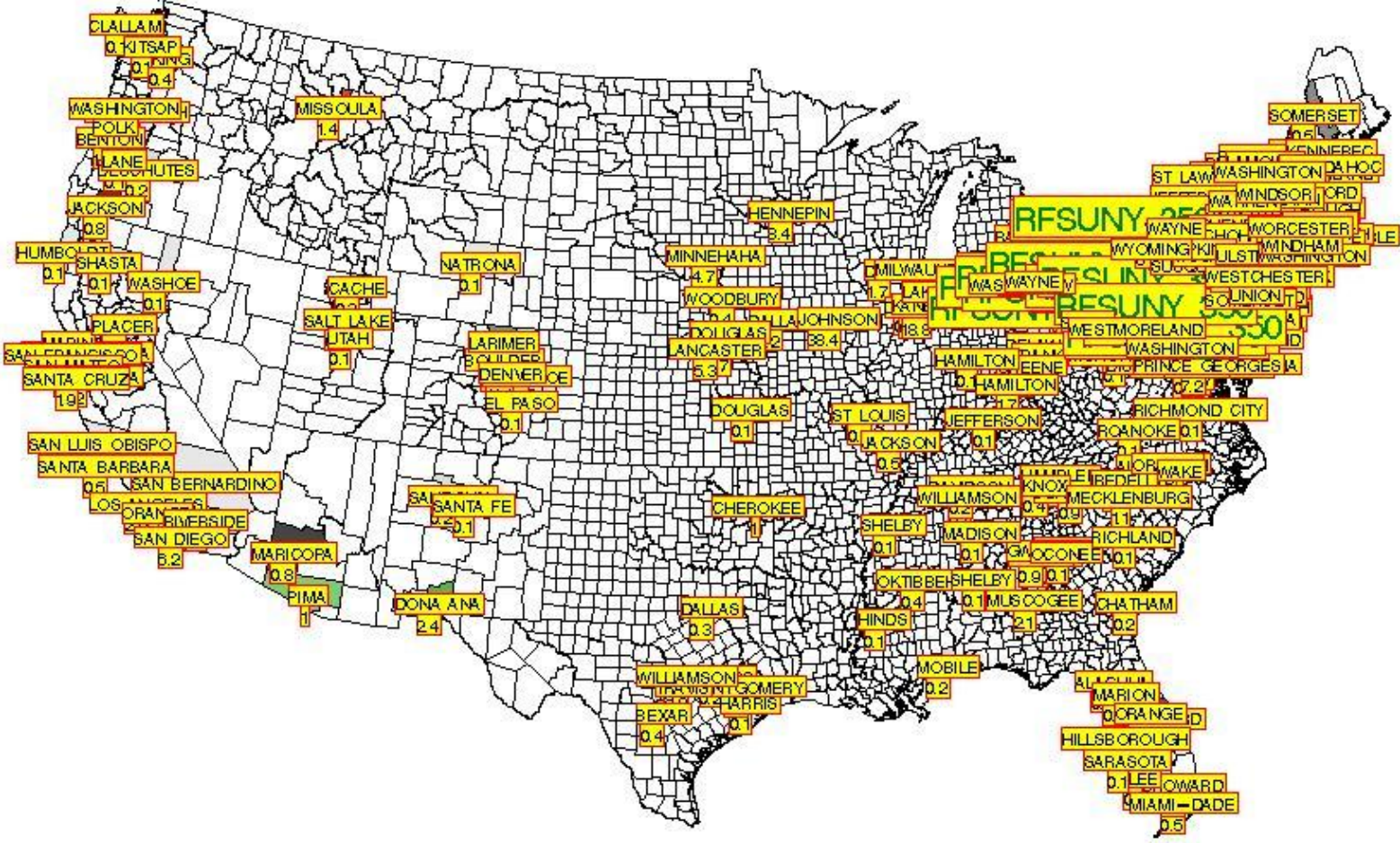


Source: STAR Metrics - Jobs funded by all sources (2011 Q2)

And jobs across the nation

National Economic Impact

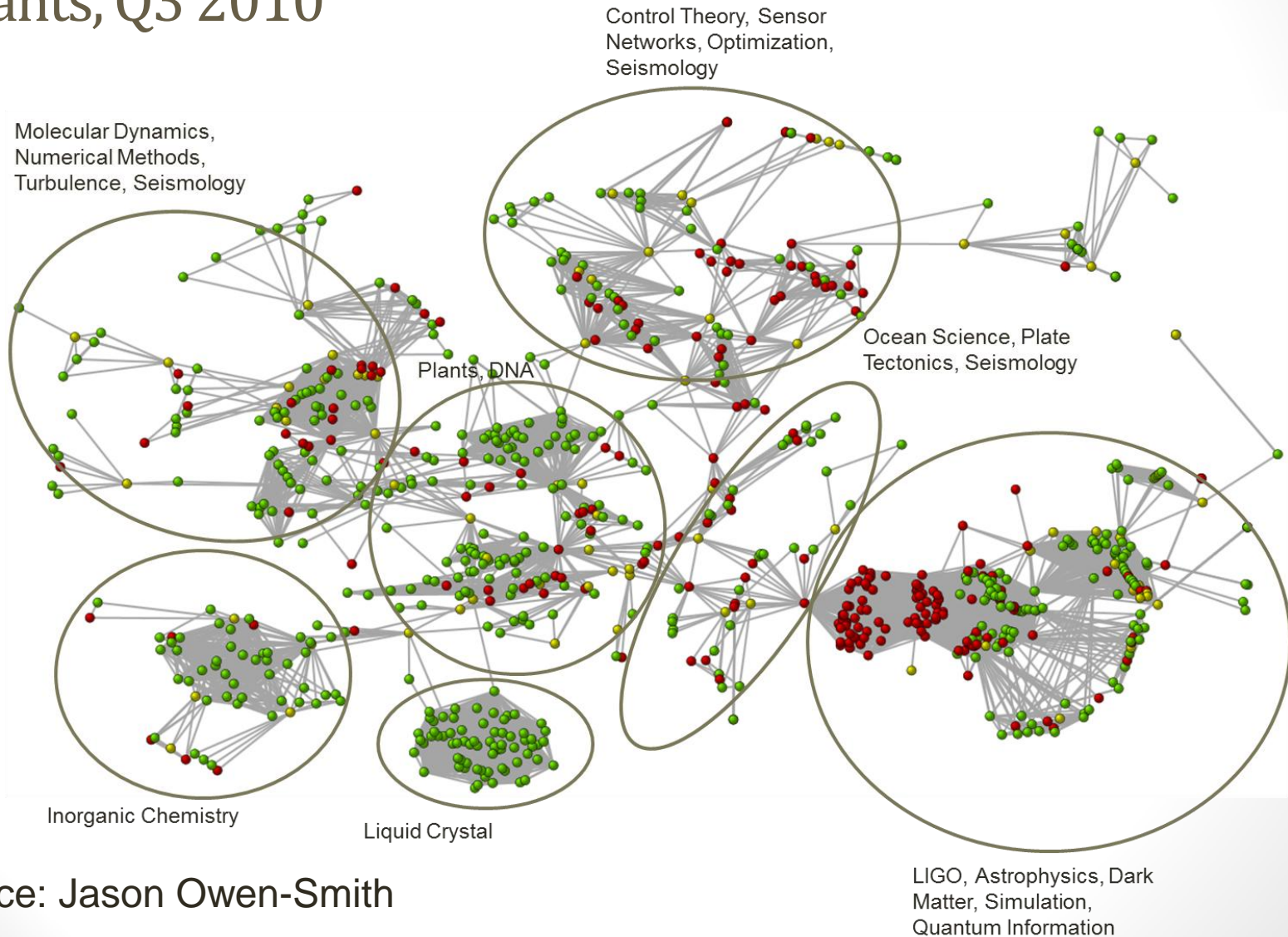
for The Research Foundation of State University of New York
 Direct Jobs through Vendor, Subawards, Subcontracts, Institutional Support



Source: STAR Metrics - Jobs funded by all sources (2011_Q2)
 Note: Map excludes Alaska, Hawaii, and Puerto Rico

Training:

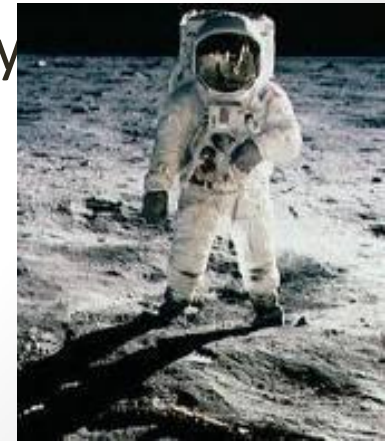
A private University's science staff paid by science agency grants, Q3 2010



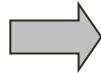
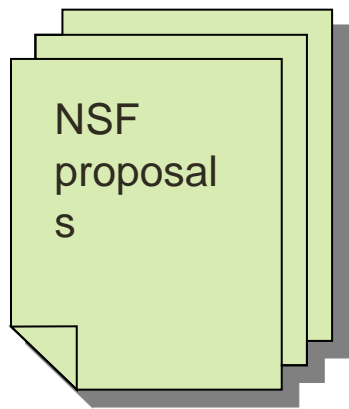
Source: Jason Owen-Smith

Level II: Approach

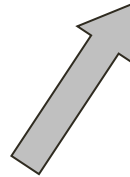
- A platform that can **link** inputs and outputs/outcomes using **automated** approaches
- Leverage **existing** data and knowledge (results of \$60 million in investments)
- **Collaborative** development of data infrastructure on broad categories of impact:
 - knowledge (e.g. publication, citations...)
 - economic (patents, spin off companies...)
 - workforce (employment, student mobility...)
 - social (e.g. health, environment, energy)



Automated capture of scientific topics

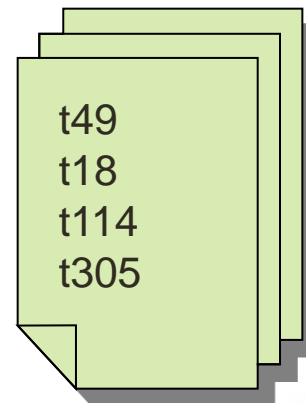
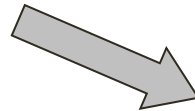


Topic Model:
- Use words from
(all) text
- Learn T topics



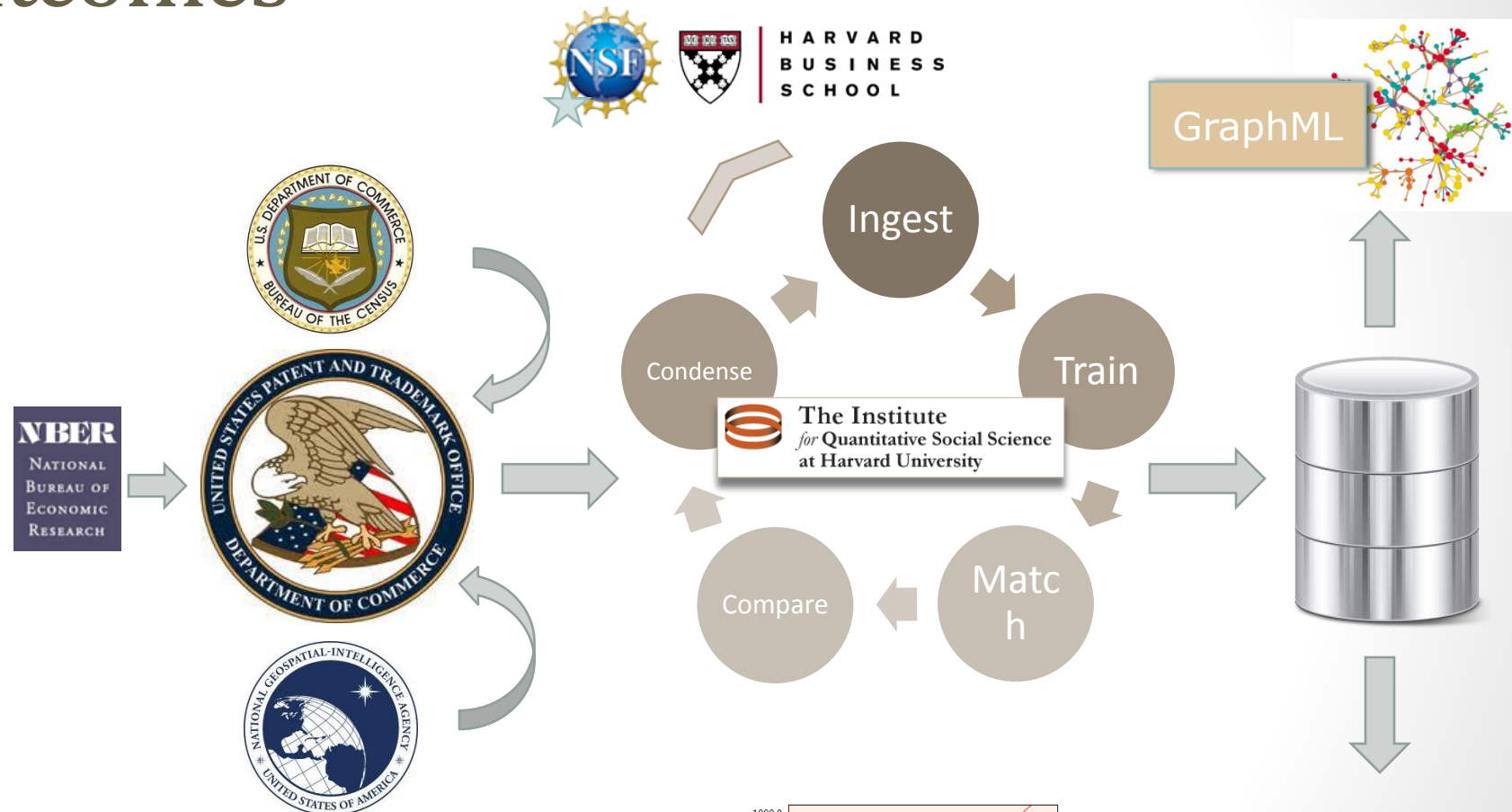
Automatically learned topics (e.g.):

- ...
- t6. conflict violence war international military ...
- t7. model method data estimation variables ...
- t8. parameter method point local estimates ...
- t9. optimization uncertainty optimal stochastic ...
- t10. surface surfaces interfaces interface ...
- t11. speech sound acoustic recognition human ...
- t12. museum public exhibit center informal outreach
- t13. particles particle colloidal granular material ...
- t14. ocean marine scientist oceanography ...
- ...



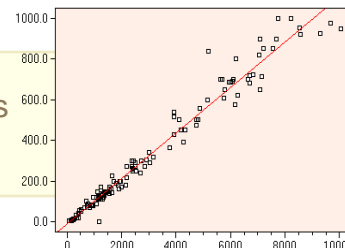
Topic tags for
each and every
proposal

Automated capture of economic outcomes



★ Institutional Support:
NSF SciSIP: 0830287, 0965259
HBS: Department of Research

- Data Analysis
- Regressions



What is being done: Specifics

- Science based Portfolio Characterization: Portfolio Explorer
- Place based Portfolio Reporting
- Reduced scientist burden: SciENCv platform

Key principles

- Build an open, transparent and automated system
- Facilitate the building of apps



Science Based Portfolio Characterization

- For agencies
 - Gap analysis: What is being funded in which areas?
 - Expertise Locator: Who is doing research in which topics?
- For Researchers
 - Funding information: What programs are funding research like mine?
 - Expertise Locator: Who else is doing research like mine?
- For VPs for Research and their Institutions
 - Gap analysis: Where are my institutional research strengths?
 - Expertise Locator: How can I connect researchers?

Portfolio Characterization

http://solmedstage.com - Star Metrics


☆☆☆☆


 STAR METRICS Portfolio Explorer 


Home Portfolio Viewer Expertise Locator People Locator Institutions

Welcome

NSF program managers have asked for tools to help them describe and assess their portfolios. This site provides three tools that help do this:

- 1. Portfolio Explorer**


This tool describes the structure of divisional and program investments by topic. It has several views: proposals, awards, researchers and institutions. Managers can examine summary statistics for selected areas or drill down to the award-level by clicking the "detailed view" buttons. Data can be printed or exported for additional review and analysis - particularly to compare different investments over time.
- 2. Expertise Locator**


This tool can be used to help find experts in particular topics. Search for PIs who have received awards in specific topic areas over time, as well as co-PIs. Future applications will permit managers to search for reviewers based on the topics associated with incoming proposals.
- 3. Institutional Overview**


This tool provides a geographic overview of NSF (and NIH) investments by institution and an earlier version of topics. It can be used to respond to requests on what research has been funded in what areas, as well as to understand the geographic dimensions of investments.

The approach presented here makes extensive use of topic modeling (for more information see rd-dashboard.nitrd.gov/topic_modeling.html). This approach provides a powerful and flexible framework for representing, summarizing and analyzing the contents of large document collections. As the tools develop, we will produce more intuitive summaries of the topics; in this beta version we simply provide the raw "bag of words" derived from using natural language processing on all NSF proposals received between 2007-2011.

Describing the Chemistry Portfolio



STAR METRICS Portfolio Explorer



Home
Portfolio Viewer
Expertise Locator
People Locator
Institutions

Viewing: Divisions: CHE Timing: 2010 - 2010 Show: Awarded, Proposed, Declined Topics: Primary Topic Only Change

Topics Filter

(include proposals for selected topics)

Show entries Search:

Select	Topic	Proposals	Funding
<input checked="" type="checkbox"/>	Topic 299 : reaction bond catalyst ligand chemistry product scheme complexe olefin activation catalytic alkene C_H reactivity carbene organometallic species aryl alkyl phosphine ...	47 / 52.27%	\$ 14.10M
<input checked="" type="checkbox"/>	Topic 495 : molecule vibrational dissociation rotational collision species radical gas_phase product excitation excited molecular spectroscopy transition energy PES photodissociation reaction neutral atom ...	32 / 34.06%	\$ 12.78M
<input checked="" type="checkbox"/>	Topic 763 : NMR spectrometer instrument MHz Bruker mhz_nmr chemistry NMR_spectrometer instrumentation probe structure nmr_spectroscopy acquisition organic sample Varian synthesis synthetic biochemistry high_field ...	31 / 80.39%	\$ 10.00M
<input type="checkbox"/>	Topic 885 : complexe ligand coordination metal chemistry species transition_metal metal_center metal_complexe reactivity synthetic bridging donor redox_atom oxidation_state synthesis reduction bond metal_ion ...	29 / 58.15%	\$ 6.97M
<input type="checkbox"/>	Topic 690 : reaction scheme synthesis cyclization yield synthetic OMe product ring natural_product aldehyde alcohol cycloaddition rearrangement MeO intramolecular ether ketone OAc reagent ...	29 / 57.34%	\$ 9.46M

Topic Selection Summary

The below reflects a summary of the Topics you selected on the left. Click the links below to analyze your Topic selection deeper.

Divisions/Topics	1/3
Proposals	110 DETAILED VIEW
Funded	\$36,873,552
Date first	2010
Date last	2010
Top Topic (#)	299 (47)
2nd Topic	495 (32)
3rd Topic	763 (31)
Top Topic (\$)	299 (\$14,097,314)
2nd Topic	495 (\$12,780,112)
3rd Topic	763 (\$9,996,126)
Awarded	95
Declined	15
CHE	110
2010	110

Describing the Chem Portfolio

Home Portfolio Viewer Expertise Locator Funding Reporter Map Viewer

Viewing: Divisions: CHE Timing: 2010 - 2010 Show: Awarded (up to last Fiscal Year), Proposed, Declined (up to last Fiscal Year) [Change Division/s](#)

Topics Filter

(include proposals for selected topics)

Show 10 entries Search: spectro

Select	Topic	Proposals	Funding	Funding Rate
<input checked="" type="checkbox"/>	Topic 763 : NMR spectrometer instrument MHz Bruker mhz_nmr chemistry NMR_spectrometer instrumentation probe structure nmr_spectroscopy acquisition organic sample Varian synthesis synthetic biochemistry high_field ...	132	\$ 6.81M	10.48%
<input checked="" type="checkbox"/>	Topic 914 : mass_spectrometry mass proteomic protein peptide mass_spectrometer MALDI ionization identification sample ESI electrospray TOF tandem proteoma instrument MALDI_TOF ion_trap lc_m peak ...	79	\$ 4.20M	9.98%
<input checked="" type="checkbox"/>	Topic 495 : molecule vibrational dissociation rotational collision species radical gas_phase product excitation excited molecular spectroscopy transition energy PES photodissociation reaction neutral atom ...	60	\$ 12.86M	45.00%
<input checked="" type="checkbox"/>	Topic 284 : surface adsorption STM XPS adsorbed adsorbate desorption UHV atom metal spectroscopy coverage sample vacuum substrate surface_chemistry surface_science monolayer bulk reactivity ...	48	\$ 3.57M	13.99%
<input type="checkbox"/>	Topic 956 : HPLC sample analytical extraction gc_m product column extract mass_spectrometry chemical identification mass peak liquid_chromatography detector instrument chromatography standard Agilent solvent ...	42	\$ 0.93M	6.57%
<input type="checkbox"/>	Topic 548 : vibrational water mode spectroscopy spectra proton SFG frequency water_molecule coupling vibration dynamic molecular molecule hydration hydrogen_bond motion liquid solvent H2O ...	35	\$ 4.31M	25.09%
<input type="checkbox"/>	Topic 250 : Raman Ser raman_spectroscopy Raman_scattering raman_spectra enhancement signal sample laser spectra spectroscopy excitation vibrational spectrum molecule spectroscopic chemical spectrometer peak resonance ...	26	\$ 1.52M	14.39%

Quick Selection Summary

The below reflects a summary of the items you selected on the left. Click the buttons below to analyze your selection deeper.

Divisions/Topics	1/4
Proposals	319 DETAILED VIEW
Funded	\$27,443,128
Date first	2010
Date last	2010
Top Topic (#)	763 (132)
2nd Topic	914 (79)
3rd Topic	495 (60)
Top Topic (\$)	495 (\$12,861,805)
2nd Topic	763 (\$6,808,476)
3rd Topic	914 (\$4,199,300)
Researchers	73 DETAILED VIEW
Institutions	27 DETAILED VIEW
Declined	225
Awarded	72
Other	22
By Division	
By Qty.	
CHE	319
By Award Amount	
CHE	\$27,443,128
By Year	
By Qty.	
2010	319
By Award Amount	
2010	\$27,443,128

Place Based Portfolio Reporting: R&D Dashboard

- For stakeholders
 - What research has been funded in my state/city?
 - Who are the researchers doing the research?
 - What are the results?
- For agencies/research institutions
 - Automated reporting of research portfolio
 - Automated documentation of institutional contribution
- For researchers
 - Minimal burden
 - Increased visibility to agencies, peers and stakeholders

Place-based investments

Grants Awarded

Discover Grants by clicking on map or using the options below.

New York

NIH/NSF

Year(s): 2000-2009

Amount: 0.00-130.00m

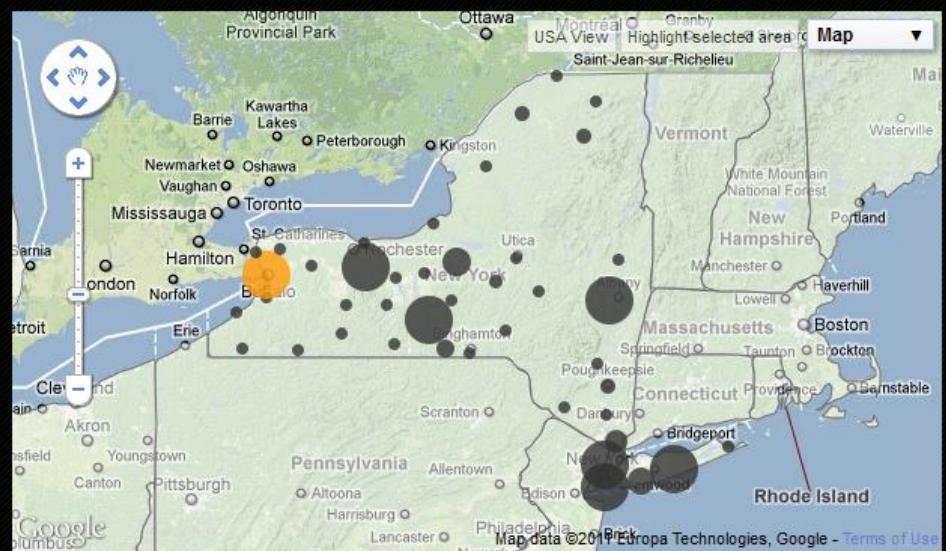
Refine results by selecting institutions or topics:

Top Research Institutions

- STATE UNIVERSITY OF NEW YORK AT BUFFALO
- ROSWELL PARK CANCER INSTITUTE CORP
- SUNY at Buffalo
- HAUPTMAN-WOODWARD MEDICAL RESEARCH INST
- BUFFALO STATE COLLEGE
- SUNY College at Buffalo
- CLEVELAND STATE UNIV

Top Topics

Download selected data as CSV



Show 100 entries

Search:

Year	Grant Number	Federal Agency	Grant Amount	Receiving Institution
2009	0922992	NSF	\$1,096,411	SUNY at Buffalo
2009	5P01CA126804-03	NIH	\$1,070,430	ROSWELL PARK CANCER INSTITUTE CORP
2009	0855637	NSF	\$910,000	SUNY at Buffalo
2009	0915131	NSF	\$845,796	SUNY at Buffalo



[Open in new window](#)

Project Information ?

1S10RR025117-01

DESCRIPTION	DETAILS	RESULTS	HISTORY	SUBPROJECTS	SIMILAR PROJECTS BETA
Project Number:	1S10RR025117-01			Contact Principal Investigator:	CANTY, JOHN
Title:	PET/CT FOR MULTIDIMENSIONAL TRANSLATIONAL CARDIOVASCULAR RESEARCH			Awardee Organization:	STATE UNIVER

Abstract Text:

DESCRIPTION (provided by applicant): Cardiovascular molecular imaging is a rapidly emerging area offering considerable promise for the evaluation of patient proof of concept studies using novel imaging agents and micro PET have been conducted in mouse models of heart disease, their translation to humans and since the human heart is 2000 times larger and dosimetry and tracer localization are considerably different. This proposal requests support to advance preclinical molecular imaging by acquiring a hybrid positron emission tomography (PET) and multidetector computed tomography (CT) scanner dedicated to research. It will permit preclinical studies of vascular and myocardial structure coupled with molecular imaging using novel cyclotron generated radiopharmaceuticals. The Center for Research in Cardiovascular Medicine and Toshiba Stroke Center at the University at Buffalo are international centers that are recognized leaders in translational cardiovascular imaging. NIH supported studies routinely employ advanced cardiovascular imaging in porcine and large animal models of stroke. Besides basic mechanistic research, active programs exist in therapeutics including vascular stents, in vivo gene transfer (mesenchymal stem cells and endothelial progenitor cells). There is also a large ongoing NIH supported clinical trial to determine if PET can predict the risk of quantifying the extent of hibernating myocardium and imaging inhomogeneity in sympathetic innervation using 11C-Hydroxyephedrine (Prediction of Arrhythmia by Tomography). The combined institutional expertise in large animal disease models including hibernating myocardium, coronary disease, cerebrovascular disease and patient oriented research in cardiac PET, quantitative image analysis and radiochemistry synthesis are unique strengths of this investigative team. The proposed two teams will facilitate rapid advancements in the field of molecular imaging as applied to the cardiovascular system. PUBLIC HEALTH RELEVANCE: Heart disease is a leading cause of death and disability. The proposed PET/CT system will advance bench to bedside research of potentially clinically relevant therapies by focusing on

Place based results

R+D Dashboard

Tracking our progress.
Leading the world in scientific and technological innovation.

BETA

- Home
- Investments
- Outputs
- About
- Contact

Publications

Patents

Patent Applications

Patents Awarded

Discover awarded Patents by clicking on map or using the options below.

New York

National Institutes of Health

Year(s): 2000-2009

Citation within 2 degrees

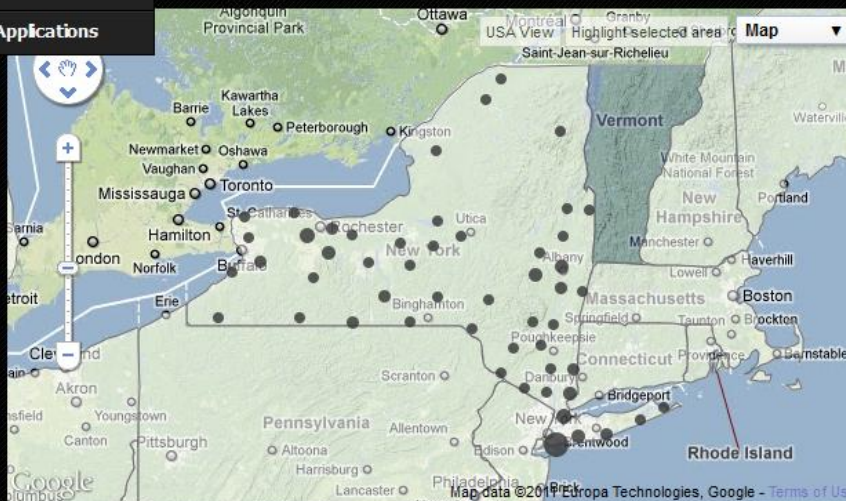
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- INTERNATIONAL BUSINESS MACHINES CORPORATION
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Patent Number	Federal Agency	Institution/Company Name	Descri
07534868	NIH (Funded PI)	REGENERON PHARMACEUTICALS INC	Human antibodies to human delta li

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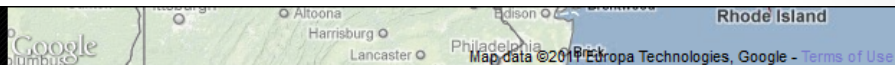
GENERAL ELECTRIC COMPANY
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Patent Number	Federal Agency	Institution/Company Name	Description
07339066	NIH	THE RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK	Intermediates for the synthesis of
07432376	NIH	RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK THE	Tropane prodrugs with central nerv
07501453	NIH	THE RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK	Cyclopropanes with central nervou
07550588	NIH	THE RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK	Homotropanes with central nervous
07615653	NIH (Funded PI)	THE RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK	Anti-tuberculosis taxane compound
07402817	NIH (2 degrees)	THE RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK	System and method for cross-talk detector
07474776	NIH/NSF (Funded PI)	THE RESEARCH FOUNDATION OF STATE OF NEW YORK	System and method for performing examination of objects, such as int
07477768	NIH/NSF (Funded PI)	THE RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK	System and method for performing examination of objects, such as int
07486811	NIH/NSF (Funded PI)	THE RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK	System and method for performing examination of objects, such as int
07482593	NIH	THE RESEARCH FOUNDATION OF STATE UNIVERSITY OF NEW YORK	Method to determine the depth-of-i

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(1 of 1)

United States Patent

7,432,376

Davies

October 7, 2008

Tropane prodrugs with central nervous system activity

Abstract

Disclosed are tropane-based prodrug compounds bearing fatty ester and aromatic substituents. The compounds can be used for alleviating symptoms of CNS disorders.

Inventors: **Davies; Huw M. L.** (E. Amherst, NY)

Assignee: **Research Foundation of State University of New York, The** (Amherst, NY)

Appl. No.: **11/716,817**

Filed: **March 12, 2007**

Related U.S. Patent Documents

Reducing Scientist Burden



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SciENCv is a Science Experts Network and CV system intended to create value for researchers, agencies and research institutions by providing an automated approach to collecting information on researchers and their accomplishments. This system will:

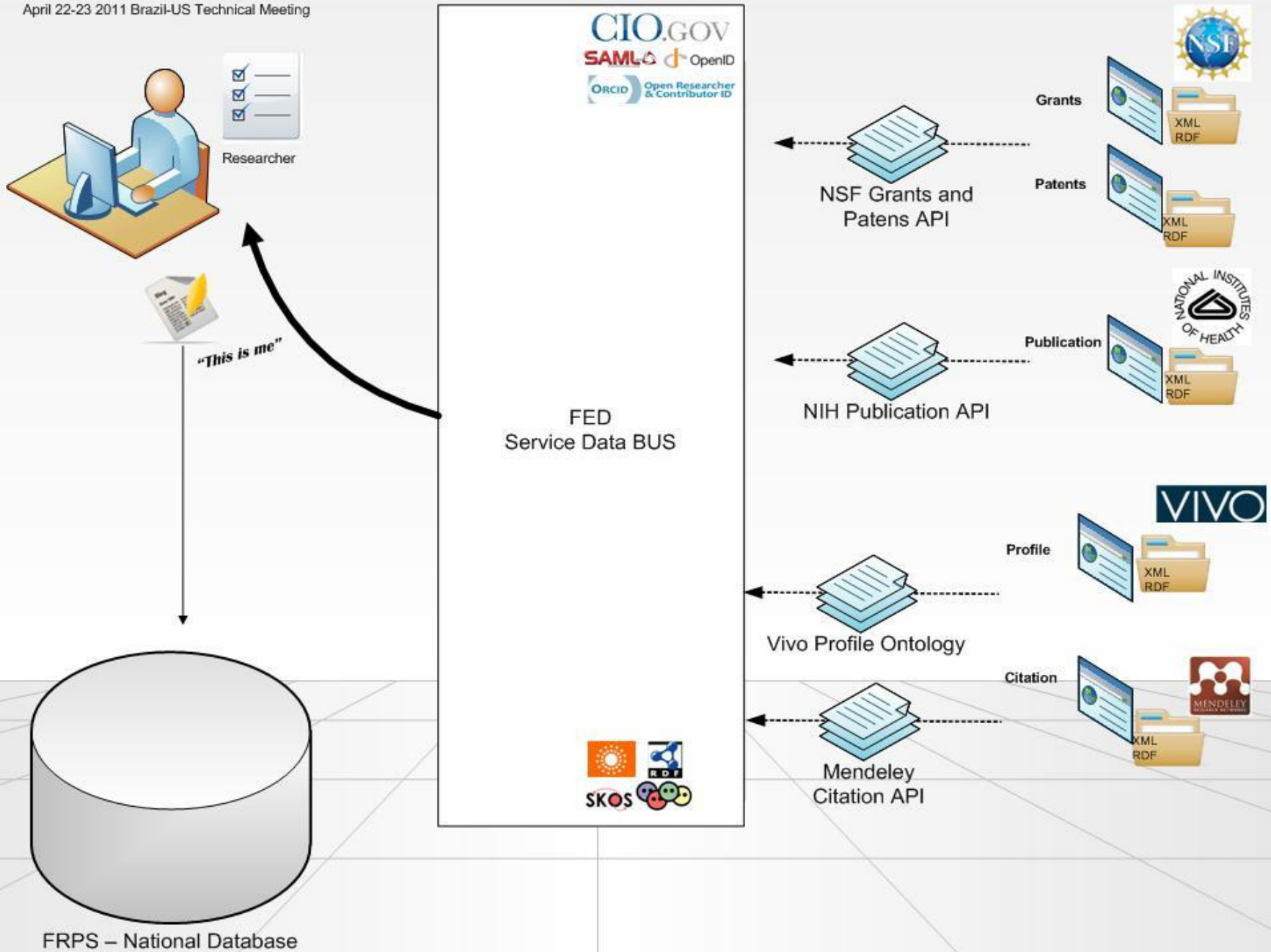
Streamline application preparation and reporting
Provide a resource for locating scientific expertise
Support analysis of results of research investments

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US FEDERAL RESEARCH PROFILE SYSTEM

STAR METRICS TECHNICAL MEETING

April 22-23 2011 Brazil-US Technical Meeting



SciEN CV Platform Next steps

- Federal Demonstration Partnership Pilot
- Lattes <http://www.slideshare.net/rpacheco/sti-national-information-system-platform-the-brazilian-case-of-lattes>
- <http://www.slideshare.net/rpacheco/sti-information-systems-brazilian-initiatives-frequently-asked-questions>
- ORCID grant

The pitfalls

- Need to paint full picture of scientific outcomes
 - => engagement of scientific community critical
 - => Open and transparent process
- Data misuse
 - => careful presentation of results
- Data quality
 - => full collaboration
 - => extensive use of pilots
- Confidentiality
 - => researcher, institution and agency controls

Ultimate Goals

- Fully fledged academic field
- Fully fledged analytical tool set in government
 - Science policy in same analytical tier as tax policy
- Common empirical infrastructure available to all universities and science agencies to quickly respond to State, Congressional and OMB requests
- Common scientific infrastructure for researchers to develop and study science policy

Thank you

- Comments and questions?