

# STAR METRICS:

Science and Technology for America's Reinvestment:  
Measuring the Effects of Research on Innovation, Competitiveness and Science

## An Overview



# Outline

- Background
- What IS STAR METRICS?
- Level I
  - Approach
  - What is produced?
- Level II
  - Approach
  - What is produced?
- Next steps

# Background

## 1. Good Government: Document Results

- Who is supported by science funding?
- What are the effects of science investments?

## 2. Good Management: Respond to Stakeholders

- OMB/OSTP directives to Heads of Science Agencies
- Congressional and public requests

## 3. Good Science: Engage scientific community

- Scientific basis for describing science
- Reduce burden on scientists

# Background:Administration Interest

Agencies, in cooperation with OSTP and OMB, should develop and sustain datasets to better document Federal science, technology, and innovation investments and to make these data open to the public in accessible, useful formats. Agencies should develop and regularly update their data sharing policies for research performers and create incentives for sharing data publicly in interoperable formats to ensure maximum value, consistent with privacy, national security, and confidentiality concerns.

Agencies should develop outcome-oriented goals for their science, technology, and innovation activities, establish timelines for evaluating the performance of these activities, and target investments toward high-performing programs in their budget submissions. Agencies should support the development and use of “science of science policy” tools that can improve management of their R&D portfolios and better assess the impact of their science, technology, and innovation investments.

*FY12 Orszag-Holdren Memo, July 21 2010; reiterates August 4, 2009 memo;  
Science of Science Policy is only program mentioned by name*

# Key Challenge

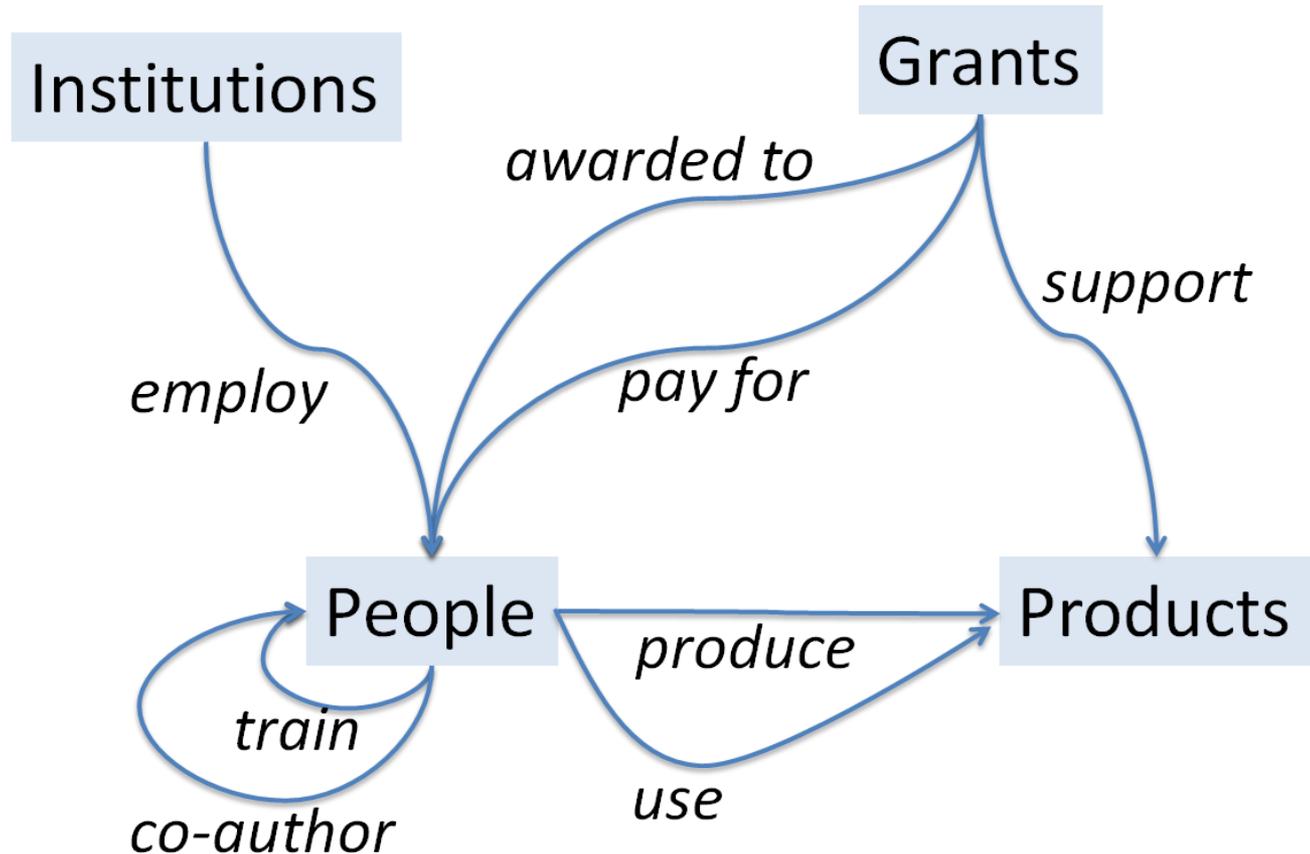
- Science agencies have been charged with identifying and funding the best science – NOT reporting. The data systems reflect that structure.
  - No systematic documentation of inputs (who is supported by science funding)
  - No systematic links between inputs and outputs
  - Heavy reliance on manual 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

# Why does this matter?

- You can't manage what you can't measure
  - What you measure is what you get
- => Systematic rethinking of way we capture data and engage scientific community in measurement of the innovation ecosystem – platform, data, methods and tools

# What is STAR METRICS?

Data about the conduct of science – inputs, outputs and the connections between the two



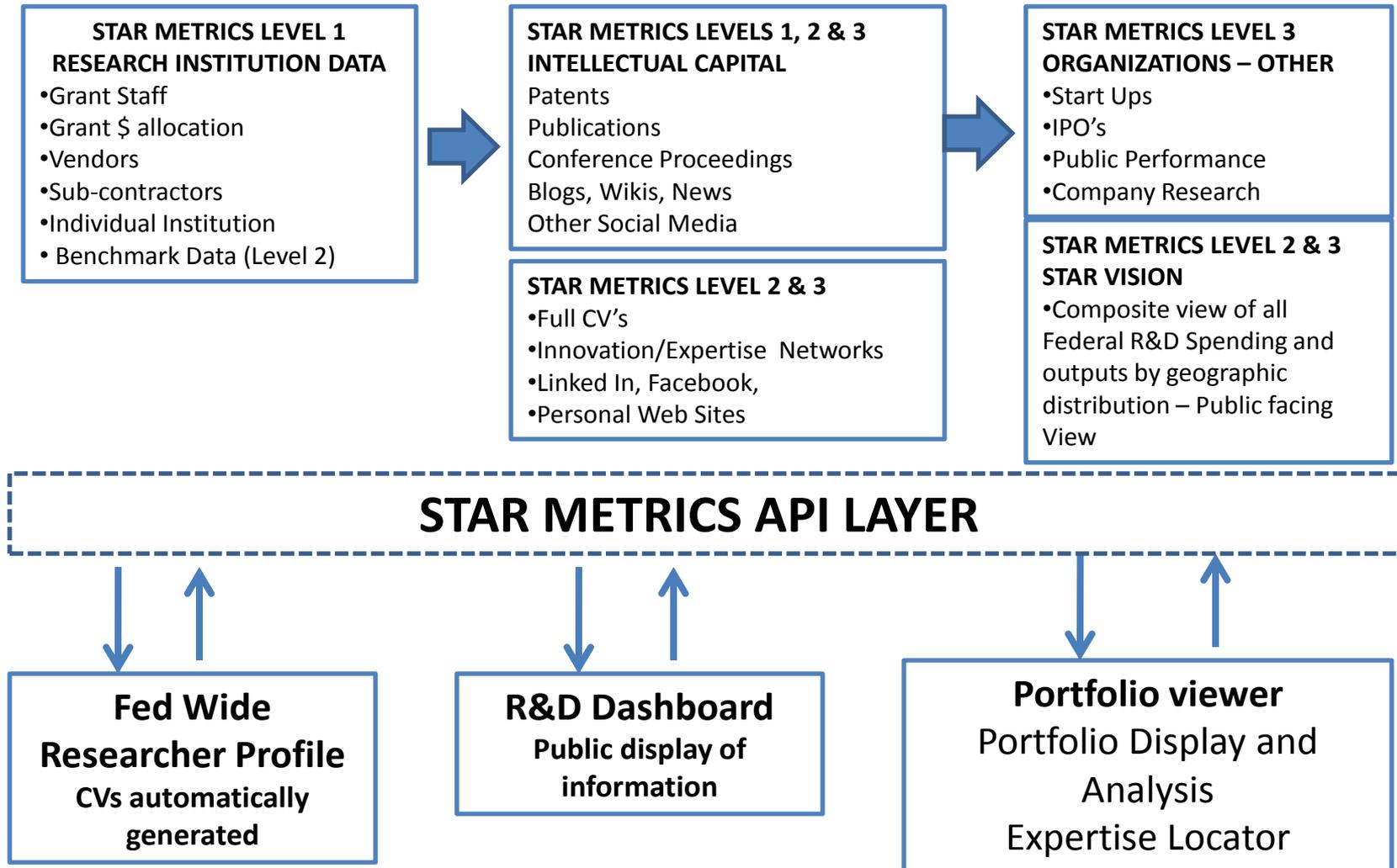
# What is STAR METRICS?

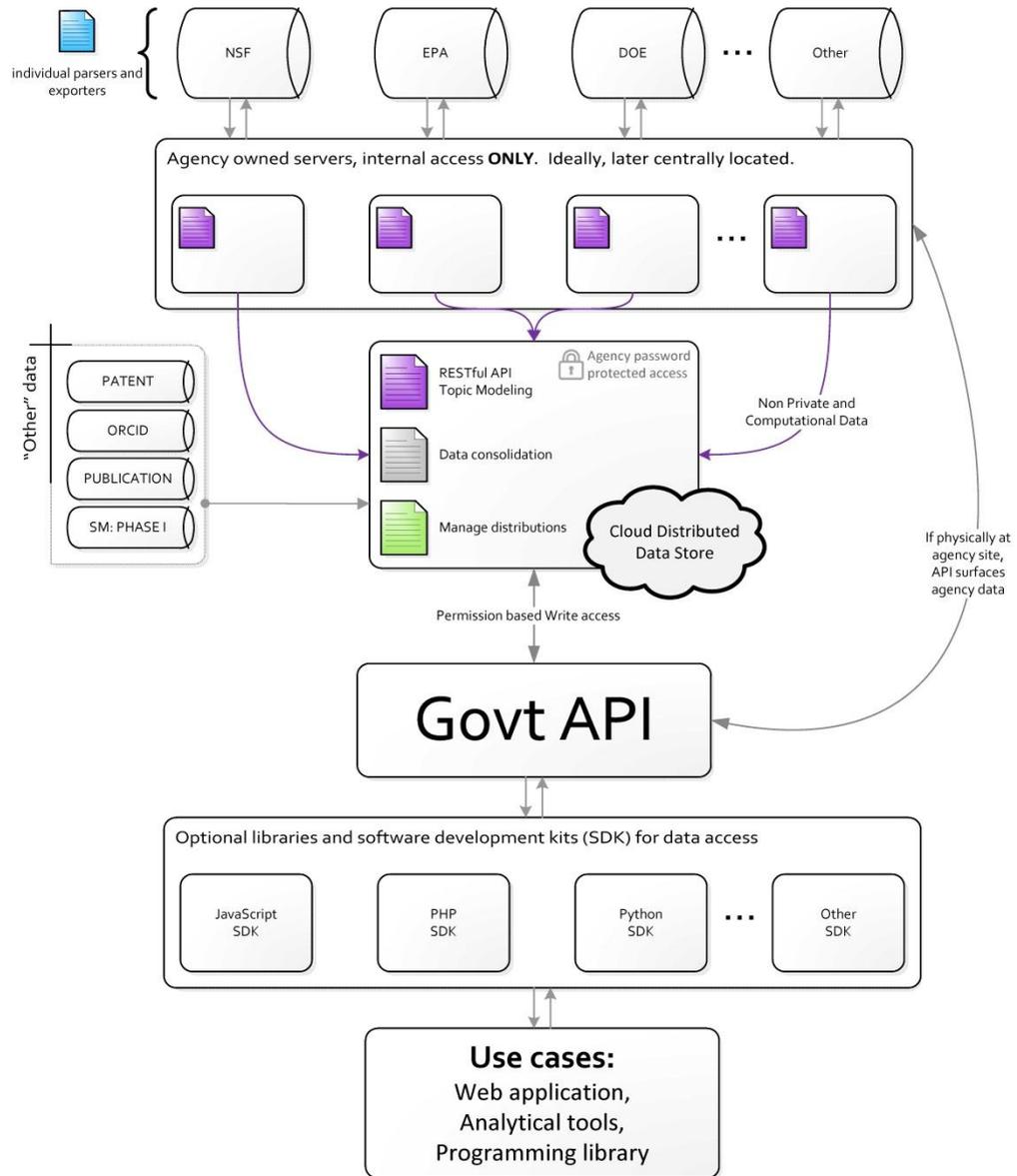
**STAR METRICS is a Federal and University partnership to document the outcomes of science investments to the public**



- OSTP initiative partnering with NIH, NSF, DOE and EPA;
- 75 research institutions participating (FDP, AAU, APLU and AAMC strong supporters)
- **Level I:** Document the numbers and occupations of workforce supported by ARRA and base budget science spending
- **Level II:** collaborative development of measures of the impact of federal science investments on
  - 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...)

# STAR METRICS DATA FLOW

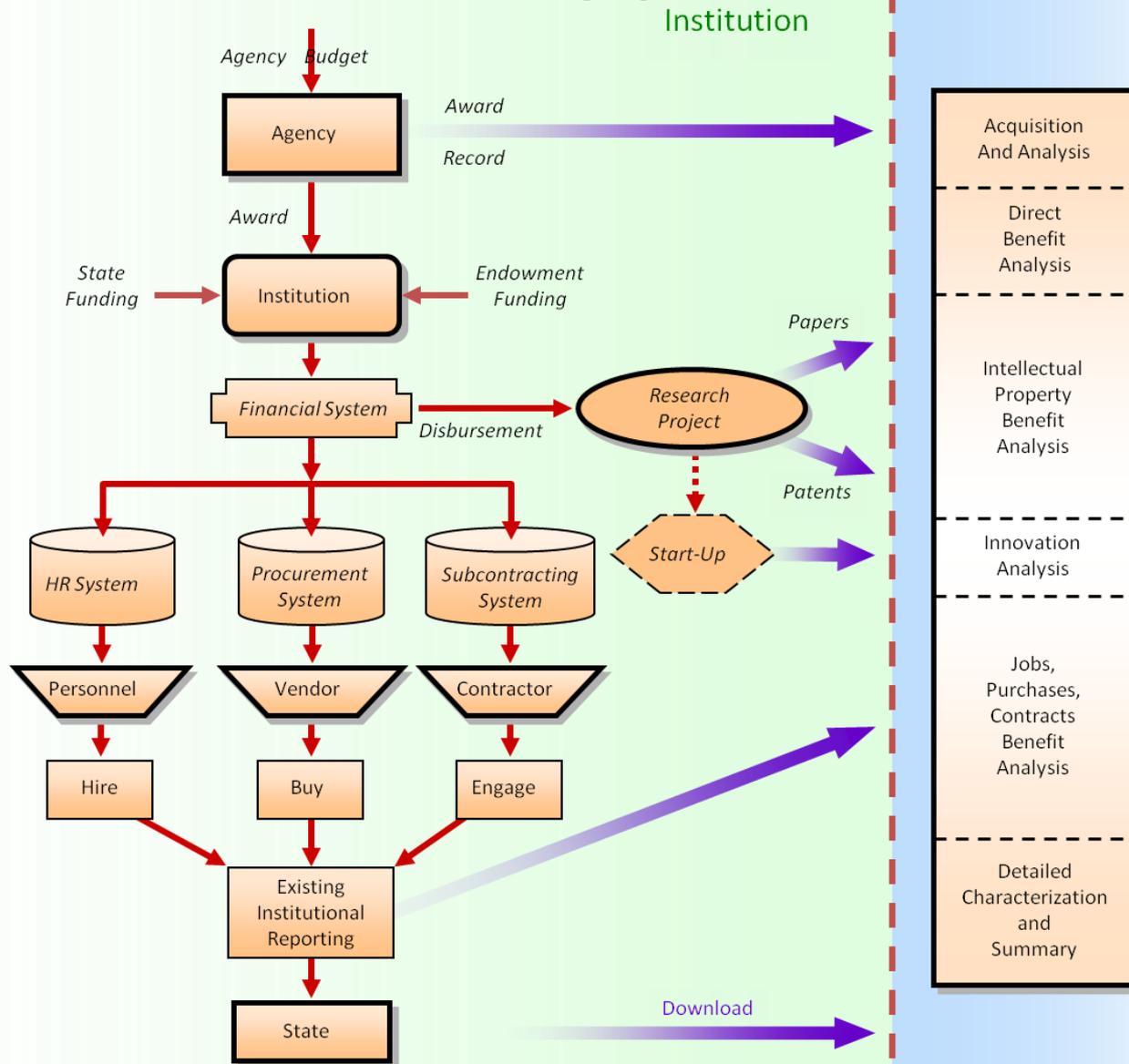




Notes:

1. PI can only access his PUBLIC information.
2. API and other (ie. Topic) software to be distributed from a central source.
3. Customized Import/Export scripts required for each individual Agency.
4. Private agency data accessible on site only.
5. SDK development on an "as-needed" basis only.
6. Backend requires stable read/write for data sources.

# Level I: Approach



# Level I: Results

## Federal Funding for Science and Jobs:

### Results from STAR METRICS Research Institutions



# Key Results:

## How many jobs supported

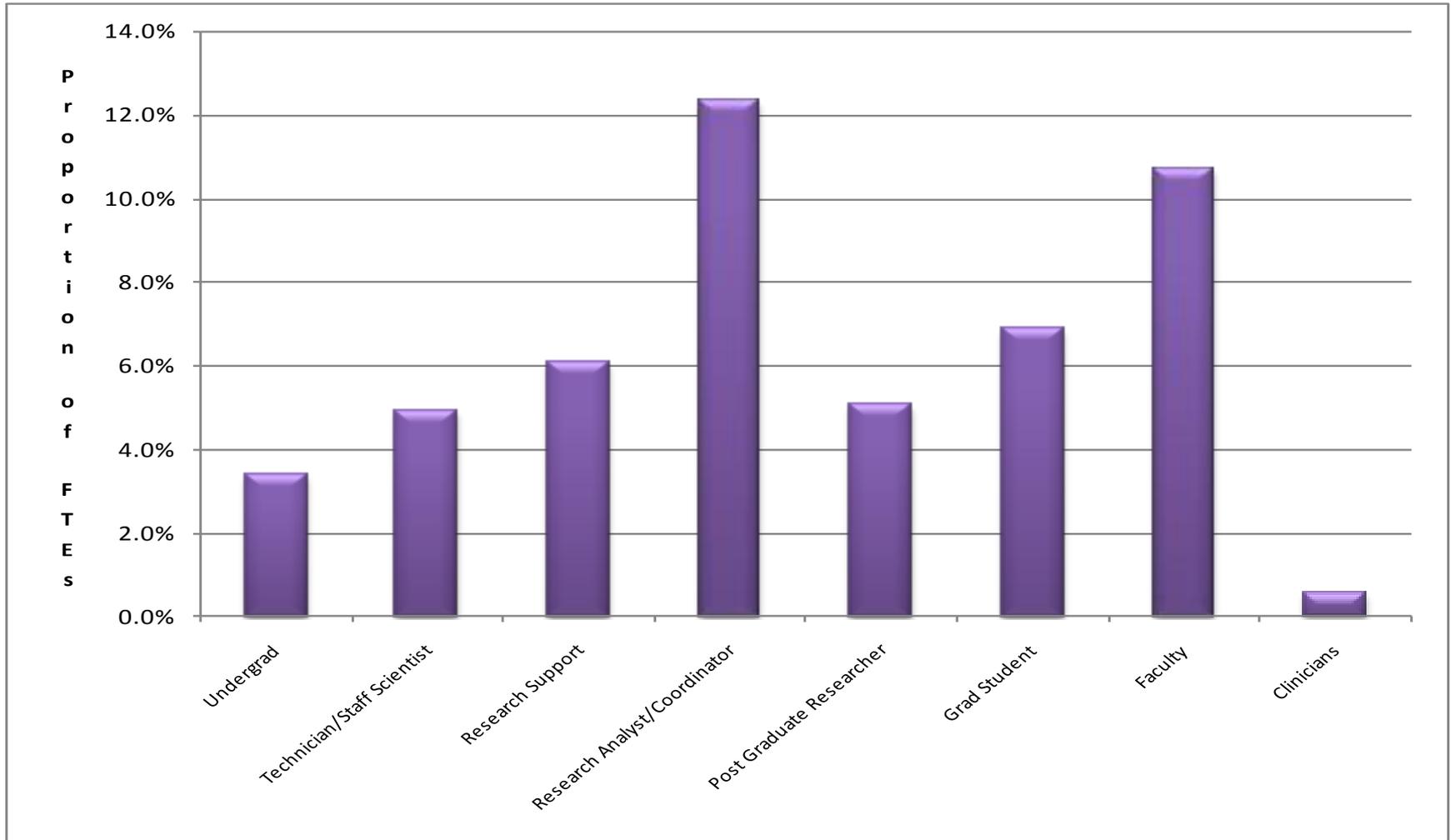
**TABLE 1: EMPLOYMENT IN 2011 Q1 ASSOCIATED WITH STAR METRICS RESEARCH INSTITUTIONS**

<i>Summary Statistics</i>	<i>Total</i>
<b>Direct Payroll FTEs</b>	
• FTEs	26,149
• FTEs per award	1.15
<b>Direct Payroll Individuals</b>	
• Number	95,070
• Number per award	4.18
<b>Direct Jobs through Vendors, Sub-awards, Institutional Support</b>	
• Number	13,732
• Number per award	.60

Note: Historical data show substantial peaks in the summer months since academic researcher salaries are often only covered in the summer.

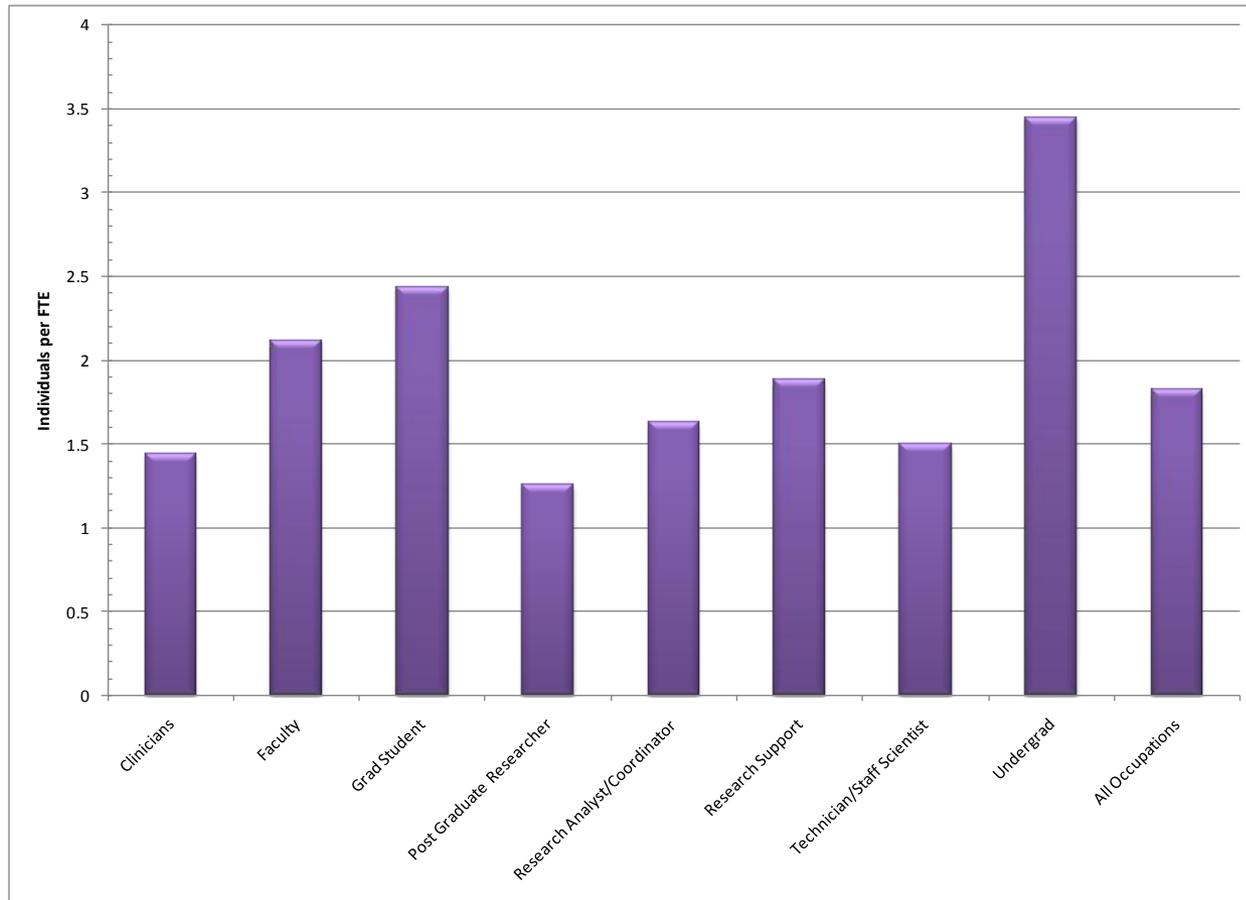
# Key Results:

The Distribution Of Occupations Directly Supported By Science Funding



# Key Results:

The Number Of Distinct Individuals Per FTE Supported By Funding



# Key Results:

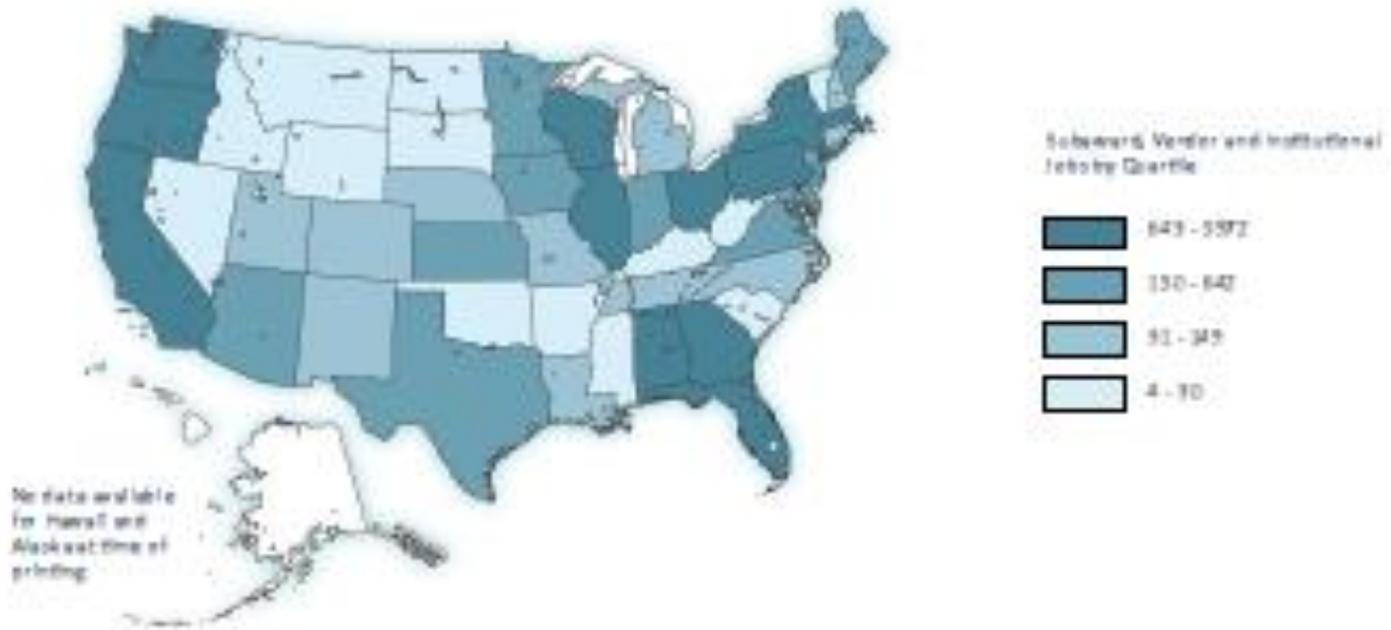
## Industry Distribution For Jobs Supported Through Research Institution Expenditures

**TABLE 2: DISTRIBUTION OF SUB-AWARD AND VENDOR JOBS BY INDUSTRY: FIRST QUARTER, 2011**

Industry	Sub-Awards	Vendors
Educational Services	72.2%	3.7%
Health Care and Social Assistance	8.7%	1.7%
Manufacturing	1.2%	33.9%
Other Services (except Public Administration)	1.1%	0.5%
Professional, Scientific, and Technical Services	15.2%	26.7%
Wholesale Trade	0.0%	27.6%
All Other Industries	1.6%	5.9%
Grand Total	100.0%	100.0%

# Geographic Distribution

---



**FIGURE 4: THE NATIONAL DISTRIBUTION OF EMPLOYMENT RESULTING FROM SCIENCE FUNDING AT REPORTING INSTITUTIONS**

# How much time is involved for the institutions?

## Survey of FDP participants

### Initial setup time

- Initial participants 20 – 640 hours; median 100 hours
- Subsequent participants 30 – 100; median 45 hours

### Subsequent transmissions

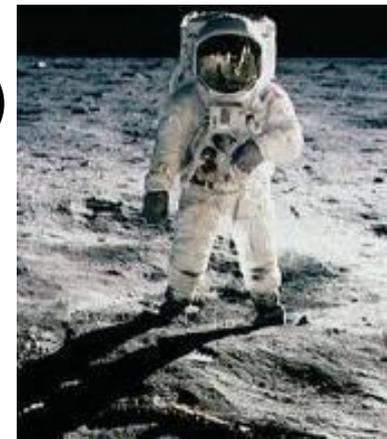
- 0-10; median 2.5 hours

# What are the uses of Level I to the agencies?

- First jobs report: who is supported
- Second jobs report: who is trained
  - Machine read awards to generate topics
  - Match topics to awards and workforce data

# Level II: Approach

- A platform that can **link** inputs and outputs/outcomes using **automated** approaches
- Leverage **existing** data and knowledge (results of \$40 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...)



# Initial Level II Results

- Portfolio Characterization and Management
  - NSF Chemistry Division
- Portfolio Reporting
  - R&D Dashboard
- Building a better system:
  - Fed Wide Profile and Visualizations

# Portfolio Characterization and Management

## **Describing portfolio**

1. In which areas of chemistry have CHEM programs made awards?
2. In which areas of chemistry are CHEM proposals being submitted?
3. How have awards and proposals changed since the reorganization of CHEM in 2009?

## **Describing market share**

3. Have Chemistry awards been made in other NSF programs and divisions? In which areas of chemistry?
4. Who is submitting proposals to other programs? Are they from Chemistry departments?
5. Have Chemistry awards been made in other science agencies? In which areas of chemistry?

# Program Management

## **Describing results**

1. How does CHEM's portfolio compare to the entire field of Chemistry?
2. What are the results of CHEM awards in terms of scientific and economic impact?

# Approach

- Identify all areas of NSF Chemistry
  - Work with universe of proposals and awards 2000-2011 – abstracts, project descriptions and program
  - Key metadata include: PI Name, institution, award amount
- Topic model abstracts and project descriptions
  - Identified topics funded by CHEM
  - Apply topics to “all” NSF awards (including Chemistry)
- Match grants to Patent database



# STAR METRICS Portfolio Explorer



[Home](#) [Portfolio Viewer](#) [Expertise Locator](#) [Institutions](#) [Researchers](#)

▼ **View**    Divisions: CHE    Proposals: Pending, Recommended, Awarded    Options: Primary; FY's 2005-2010;    [View](#)

Select one or more NSF Division(s)

- Directorate for Mathematical & Physical Sciences
- Division of Astronomical Sciences
- Division of Chemistry
- Division of Materials Research
- Division of Mathematical Sciences

Proposals

- Pending
- Recommended
- Awarded
- Declined

Options

- Show primary topics only (default)
- Fiscal Years:  to

► **Topic(s)**    Topics:    Proposals:  Pending     Awarded    Institutions    Patents (soon)    [Edit](#)  
 (selected)     Recommended     Declined    Researchers    Publications (soon)    [View](#)

► **Proposals**



# STAR METRICS Portfolio Explorer



Home Portfolio Viewer Expertise Locator Institutions Researchers

View Divisions: CHE Proposals: Pending, Recommended, Awarded Options: Primary; FY's 2005-2010; Edit

Topic(s) (selected) Topics: 3/142 Proposals: Pending 1,733 Recommended 108 Awarded 104 Declined 1,629 Institutions 75 Researchers 175 Patents (soon) Publications (soon); Edit View

Descriptions

Proposal Data

Sort by: # proposals

Select	Topic	Division(s)	Awarded # / % of topic	Funding \$ (million)
<input checked="" type="checkbox"/>	Topic 211: synthesis reaction organic synthetic chiral chemistry_program compound organic_macromolecular molecules department_chemistry chemistry pharmaceutical asymmetric...	CHE	43 / 2.29%	2.02
<input checked="" type="checkbox"/>	Topic 39: metal complexes ligand inorganic chemistry bond compound bioinorganic transition_metal organometallic_chemistry chemistry_program cluster reactivity iron ions ...	CHE	33 / 5.18%	1.03
<input type="checkbox"/>	Topic 26: molecular molecules spectroscopy dynamic molecule chemistry_program energy vibrational physical_chemistry single experimental electronic system excited processes...	BIO, CHE	32 / 3.28%	1.23
<input type="checkbox"/>	Topic 397: NMR molecules magnetic_resonance chemistry nuclear_magnetic structure research_instrumentation NMR_spectrometer spectrometer acquire MHz department_chemistry NMR_spectroscopy acquisition chemist ...	BIO, CHE, PHY	31 / 3.00%	10.23
<input checked="" type="checkbox"/>	Topic 248: theoretical computational molecular simulation calculation theory dynamic quantum monte system carlo experimental density computational_chemistry properties ...	CHE, PHY	28 / 2.99%	34.01
<input type="checkbox"/>	Topic 362: analysis mass_spectrometry analytical mass_spectrometer mass instrument chromatography ion chemical separation liquid technique ionization chemistry gas ...	CHE, PHY	21 / 3.15%	0.76
<input type="checkbox"/>	Topic 90: building laboratory facility clock upgrade circadian renovation facilities space lab system equipment laboratories existing ...	CHE	10 / 4.08%	4.56

Select Above (10) / Select All (327)

Deselect All (3)

7 topics/page

Page 1 2 3 4 5 6 7 Previous Next

## Selection Summary



The below reflects a summary of the Topics you select/ed on the left. Click the buttons below to analyze your Topic selection deeper.

### Divisions/Topics 2/3 Analyze

Top Division CHE (3 topics)  
2nd PHY (1 topic)

### Awarded 104 Analyze

Total Funding \$37,063,450  
Date first 04/5/2005  
Date last 11/21/2010

Top Topic (#) 211 (43 grants)  
2nd 39 (33)  
3rd 248 (28)

Top Topic (\$) 248 (\$34.01M)  
2nd 211 (2.02)  
3rd 39 (1.03)

### Institutions 75 Analyze

Total # of States 8  
Top Region California (22 grants)  
2nd Arizona (14)  
3rd Kentucky (8)  
4th Pennsylvania (8)  
5th New Jersey (4)  
(more)

### Researchers 286 Analyze

Top Researcher Dr. Josep ...ink (3 grants)  
2nd Dr. Janice V...oss (2)  
3rd Ms. Jane Doe (2)  
4th Dr. Arie va...oek (2)  
5th Dr. Jesse Alb...os (1)  
(more)



# STAR METRICS Portfolio Explorer



Home **Portfolio Viewer** Expertise Locator Institutions Researchers

▶ View Divisions: CHE Proposals: Pending, Recommended, Awarded Options: Primary; FY's 2005-2010; [Edit](#)

▼ Topic(s) Topics: 3/142 Proposals: Pending 1,733 Awarded 104 Institutions 75 Patents (soon) [Edit](#)  
 (selected) Recommended 108 Declined 1,629 Researchers 175 Publications (soon) [View](#)

Descriptions

Proposal Data

Sort by: # Awarded

Select Topic	Proposals	Proposals			#/% of topic	\$(M)	Quantity Distribution		Award Distribution (\$)	
		👍	✖	👤			1/'08	12/'10	1/'08	2/'10
<input checked="" type="checkbox"/> <a href="#">t211</a>	1441	41	350	43 / 2.29%	2.02					
<input checked="" type="checkbox"/> <a href="#">t39</a>	464	32	108	33 / 5.18%	1.03					
<input type="checkbox"/> <a href="#">t26</a>	736	32	176	32 / 3.28%	1.23					
<input type="checkbox"/> <a href="#">t397</a>	783	31	188	31 / 3.00%	10.23					
<input checked="" type="checkbox"/> <a href="#">t248</a>	711	27	171	28 / 2.99%	34.01					

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Topic(s) Topics: 3/142 (selected) Proposals: Pending 1,733 Recommended 108 Awarded 104 Declined 1,629 Institutions 75 Researchers 175 Patents (soon) Publications (soon) Edit View

## Proposals Explorer

Topics Funding Researchers Institutions Patents Publications

Sort by: Award Date

Select Proposal ID	Award (\$)	Date	Prg Elem. Code	Divisions	Topics	Abstract
<input checked="" type="checkbox"/> 1048719	\$199,117	2010/12/15	1938	CHE, PHY	362, 397, 146, 209	Abstract >
<input type="checkbox"/> 1048655	\$180,905	2010/12/15	1938	CHE	362, 61, 339, 397	Abstract >
<input checked="" type="checkbox"/> 1048600	\$299,872	2010/12/15	1938	BIO, CHE	330, 383, 171, 70	Abstract >
<input checked="" type="checkbox"/> 1048548	\$311,381	2010/12/15	1938	CHE	26, 397, 70, 297	Abstract >
<input type="checkbox"/> 1048528	\$416,542	2010/12/15	1938	CHE	362, 39, 335, 397	Abstract >
<input checked="" type="checkbox"/> 1105272	\$258,661	2010/11/15	6883	CHE	26, 5, 328, 160	Abstract >
<input checked="" type="checkbox"/> 0959621	\$207,275	2010/11/15	1189	CHE	362, 397, 394, 267	Abstract >
<input checked="" type="checkbox"/> 1120184	\$144,368	2010/6/18	1950	CHE	211, 272, 61, 49	Abstract >
<input type="checkbox"/> 1120184	\$144,368	2010/5/04	1950	CHE	211, 272, 61, 49	Abstract >
<input type="checkbox"/> 1120184	\$144,368	2010/5/04	1950	CHE	211, 272, 61, 49	Abstract >
<input type="checkbox"/> 0959621	\$207,275	2010/11/15	1189	CHE	362, 397, 394, 267	Abstract >
<input type="checkbox"/> 1120184	\$144,368	2010/6/18	1950	CHE	211, 272, 61, 49	Abstract >
<input type="checkbox"/> 1120184	\$144,368	2010/5/04	1950	CHE	211, 272, 61, 49	Abstract >
<input type="checkbox"/> 1120184	\$144,368	2010/5/04	1950	CHE	211, 272, 61, 49	Abstract >

Select Above (10) / Select All (327) 14 topics/page Page 1 2 3 4 5 6 7 Previous Next Deselect All (3)

## Selection Summary

The below reflects a summary of the Proposals you select/ed on the left.

**Grants Selected** 6/104

Date first 2010/6/8  
Date last 2010/12/15  
Span 6 months

**Total Selection Award** \$1,420,435

**Top Award** \$311K (1048548)  
2nd \$300K (1048719)  
3rd \$259K (1048719)  
4th \$207K (1048719)  
More

**Smallest Award** \$181K (1048655)

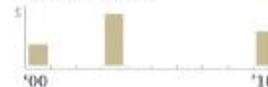
**Topics Selected** 12/142

211 1st Grants: 3 (5.88%)  
Declined 48  
Total \$316K  
Avg \$105.3K

### Grants over Time



### Awards over Time



362 2st Grants: 3 (5.88%)  
32 3rd Grants: 3 (5.88%)  
48 4th Grants: 3 (5.88%)

Narrowing the topic and organization selection at this level allows you to see related researchers, institutions, and eventually patents and publications

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[Researchers](#)

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▶ **View**    Divisions: CHE    Proposals: Pending, Recommended, Awarded    Options: Primary; FY's 2005–2010;    [Edit](#)

▶ **Topic(s)**    Topics: 3/142    Proposals: Pending 1,733    Awarded 104    Institutions 75    Patents (soon)    [Edit](#)  
 (selected)    Recommended 108    Declined 1,629    Researchers 175    Publications (soon)    [View](#)

▼ **Proposals Explorer**

[Topics](#)   [Funding](#)   [Researchers](#)   [Institutions](#)   [Patents](#)   [Publications](#)

Sort by: Award Date

Select Proposal ID	Award (\$)	Date ▲	Prg Elem. Code	Divisions	Topics
<input checked="" type="checkbox"/> 1048719	\$199,117	2010/12/15	1938	CHE, PHY	<a href="#">362</a> , <a href="#">397</a> , <a href="#">146</a> , <a href="#">209</a> <a href="#">Abstract »</a>
<input type="checkbox"/> 1048655	\$180,905	2010/12/15	1938	CHE	<a href="#">362</a> , <a href="#">61</a> , <a href="#">339</a> , <a href="#">397</a> <a href="#">Abstract »</a>

**Title:** Acquisition of Matrix-Assisted Laser Desorption/Ionization Time of Flight Mass Spectrometer (MALDI-TOF)  
**Abstract:** With this award from the Chemistry Research Instrumentation and Facilities: Multi-user (CRIF:MU) program, Professor Sarah Green and colleagues Lanrong Bi, Shiyue Fang, Haiying Liu and Martin Thompson from Michigan Technological University will acquire a benchtop matrix-assisted laser desorption/ionization time-of-flight (MALDI-TOF) mass spectrometer. The award will enhance research training and education at all levels, especially in areas of study such as (a) DNA sequencing using solid phase capturable di-deoxynucleotides, (b) oligonucleotide purification and block gene expression, (c) design and synthesis of highly water-soluble fluorescent conjugated glycopolymers and glycodendrimers, (d) dendrimers with multiply-bonded dimetallic cores, and (e) analysis of free and glycoprotein-bound glycan structures. Mass spectrometers (MS) are used to identify the chemical composition of a sample by measuring the mass of the molecular constituents in the sample after they are ionized and detected by the mass spectrometer. Matrix-assisted laser desorption ionization (MALDI) is a technique for preparing the sample to be ionized by a laser before injection into the mass spectrometer. The time of flight (TOF) mass analyzer has high sensitivity and mass accuracy to assist the analyses and interpretation of the resultant data. This open access instrument will be available for training students in this analytical tool. It will be used by undergraduate and graduate students in research and in laboratory instruction courses and in outreach activities.

**Selection Summary**

The below reflects a summary of the Proposals you select/ed on the left.

<b>Grants Selected</b>	6/104
Date first	2010/6/8
Date last	2010/12/15
Span	6 months
<b>Total Selection Award</b>	\$1,420,435
<b>Top Award</b>	\$311K ( <a href="#">1048548</a> ) ▼
2nd	\$300K ( <a href="#">1048719</a> )
3rd	\$259K ( <a href="#">1048719</a> )
4th	\$207K ( <a href="#">1048719</a> )
<a href="#">More</a>	
<b>Smallest Award</b>	\$181K ( <a href="#">1048655</a> ) ▶
<b>Topics Selected</b>	12/142
<a href="#">211</a> 1st	Grants: 3 (5.88%) ▼
Declined	48
Total	\$316K
Avg	\$105.3K

**Grants over Time**



# STAR METRICS Portfolio Explorer



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▼ [View](#) Topics: 112, 211, 85, 139 Fiscal Years: 2005–2010

[View](#)

## List of Topics:

Division: (all) ▼

Filter:

- T-642: speaker talk participant Chair organizer T-GR...
- T-341: reu\_student REU\_Site reu\_program undergrad...
- T-595: room space facilities renovation floor constru...
- T-149: mathematical mathematician math ...
- T-615: spin quantum superconductor electron physic...

[Select »](#)

[X Remove](#)

## Selected Topics:

- T-112: speaker tal...
- T-211: reu\_studen...
- T-85: room spacta...
- T-139: mathemat...

## Date Range:

2005 ▼ to 2010 ▼

► [Select](#) [Researchers](#)

[Institutions](#)

[View](#)

[Edit](#)

► [Explore](#)

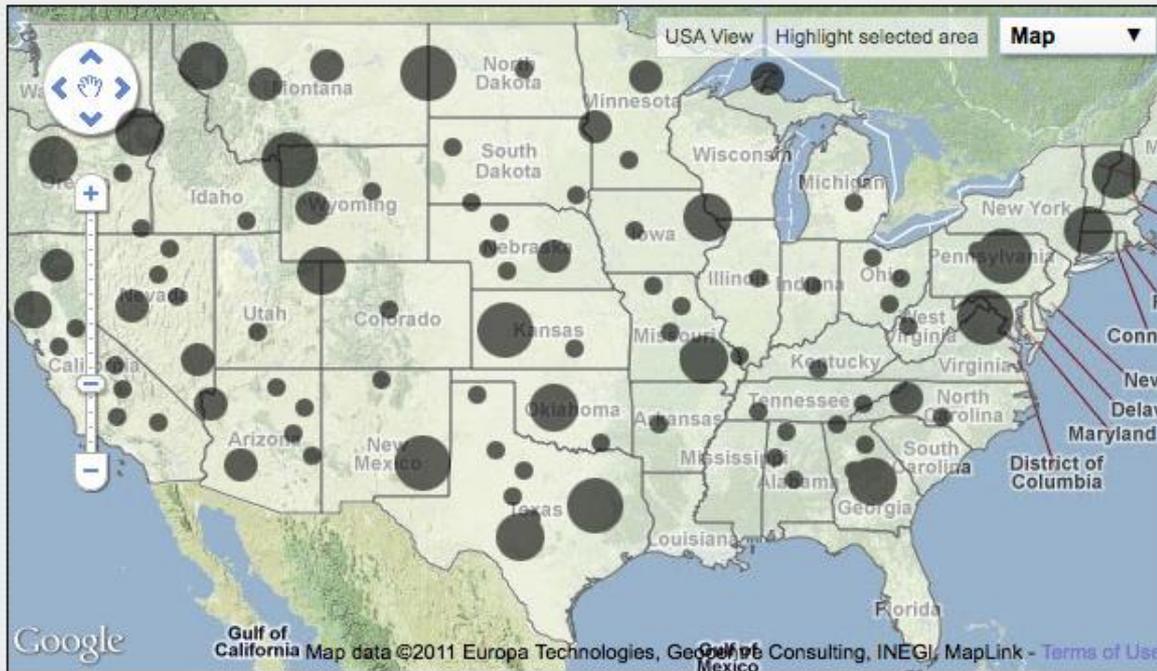
Select Researchers 89/1,142 Institutions 51/495

View Edit

By Investment

By Output

Filters: NSF CHE PHY Topics (all) Awards <\$1.5M State ALL



### Selection Summary



The below reflects a summary of the PI's you select/ed on the left.

Researchers/PIs 89 Institutions 51 [Explore](#)

Top Institutions (# of Grants)

Top Institutions (Awards) (\$M)

- 1st \$27.45 National Childhood Cancer Foundation
- 2nd \$18.85 University of California San Francisco
- 3rd \$12.75 Kaiser Foundation Research Foundation
- 4th \$11.00 University of California San Diego
- 5th \$10.01 Wyman Megan T

Top Topics (# of Grants)

Top Topics (Awards) (\$M)

Top States (# of Grants)

- 1st 123 California
- 2nd 98 Connecticut
- 3rd 80 Kansas
- 4th 20 New York
- 5th 17 Iowa

Top States (Awards) (\$M)

Select	Division	Topics	Award	Date	PI's	State	Institution		
<input checked="" type="checkbox"/>	NSF	CHE	185, 19	\$141.1K	2009/1/14	1	CA	Braybrook Siobhan A	<a href="#">More</a>
<input type="checkbox"/>	NSF	CHE	237, 365, 212	\$178.2K	2009/4/6	1	CA	Wyman Megan T	<a href="#">More</a>
<input type="checkbox"/>	NSF	BIO, CHE	304, 377, 88, 64	\$5.6K	2009/4/2	1	KS	Davidson Andrew A	<a href="#">More</a>
<input type="checkbox"/>	NSF	CHE	81	\$300.0K	2008/6/26	2	NY	NEES Consortium, Inc.	<a href="#">More</a>

▶ View Topics: 112, 211, 85, 139 Fiscal Years: 2005-2010 Edit

▶ Select Researchers 89/1,142 Institutions 51/495 Edit

▼ Explore

Researchers / PIs

**Institutions**



Co-PI's

Proposals: Submitted



Awarded

Declined

ID	State				Awards (\$)	Last		Topics
<a href="#">307378</a>	CA	3	2	1 (33%)	\$4.92K	2010	2	318,427,386,446,252,160,434,510 <a href="#">More</a>
<a href="#">968254</a>	CA	3	2	1 (33%)	\$4.85K	2009	5	323,459,293 <a href="#">More</a>
<a href="#">958415</a>	NY	2	0	2 (100%)	\$8.81K	2010	3	539,193,378,155,576 <a href="#">More</a>

**Joseph M. Smith**

MHSc  
[joseph\\_smith@usa.edu](mailto:joseph_smith@usa.edu)  
 321-953-1212

[CV / Bio »](#)

Department of Health Science  
 University of St. Augustine - San Diego  
 700 Windy Point Drive  
 San Marcos, CA 92069

**Proposals (2):**

Submitted 2  
 Declined 0  
 Grants 2 (100%)  
 Awards \$4,810  
 Award Avg. \$4.81K  
 Awards Rank 0.5%  
 Date First 2/11/2008  
 Date Last 5/8/2010

**Co-PIs (3):**

[Steven L Suib \(2\)](#)  
[David R Yarkony \(1\)](#)  
[Martha Greenblatt \(1\)](#)

**Topics (5):**

[539 \(1\)](#)  
[193 \(1\)](#)  
[378 \(2\)](#)  
[155 \(1\)](#)  
[576 \(2\)](#)

<a href="#">399372</a>	CT	6	2	4 (67%)	\$27.64K	2008	4	54,166,523,24,194 <a href="#">More</a>
<a href="#">266804</a>	NY	8	3	5 (63%)	\$6.65K	2009	4	542,438,165,586,86 <a href="#">More</a>
<a href="#">101225</a>	CA	6	2	4 (67%)	\$5.72K	2006	5	550,389,28,132,145,411 <a href="#">More</a>
<a href="#">039372</a>	CA	8	3	5 (63%)	\$12.75K	2010	3	444,381,421,335,78,453,191,249 <a href="#">More</a>
<a href="#">974391</a>	CT	2	1	1 (50%)	\$11.00K	2010	1	454,392,54,530 <a href="#">More</a>
<a href="#">832378</a>	NY	1	0	1 (100%)	\$9.26K	2009	1	524,578,433,100,33 <a href="#">More</a>

Selection Summary



Researchers/PIs 89  
 Institutions 51

[Explore](#)

Top Institutions (# of Grants)

Top Institutions (Awards) (\$M)

1st	\$27.45	<a href="#">National Childhood Cancer Foundation</a>
2nd	\$18.85	<a href="#">University of California San Francisco</a>
3rd	\$12.75	<a href="#">Kaiser Foundation Research Foundation</a>
4th	\$11.00	<a href="#">University of California San Diego</a>
5th	\$10,01	<a href="#">Wyman Megan T</a>

Top Topics (# of Grants)

Top Topics (Awards) (\$M)

Top States (# of Grants)

1st	123	California
2nd	98	Connecticut
3rd	80	Kansas
4th	20	New York
5th	17	Iowa

# Link to Federal Researcher Profile

[Home](#) [Portfolio Explorer](#) [Expertise Locator](#) [Institutions](#)

Viewing: NSF ID: (\*) Proposal ID: (\*) First name: (\*) Last: Smith Organization: (\*) [View](#) [Edit](#)



**Federal Researcher ID - FID12345**  
Smith, Joseph  
e-mail:  
Address:  
Phone number:  
Other:

**Primary Research Topic Areas**  
312,211,453

**Associated ID's** ([table](#))

[CV](#) [Publications](#) [Patents](#) [Fed. Grants](#) [Collaborators](#) [Research Topics](#)

**Business Address**  
Massachusetts Institute of Technology  
89 Ames Street 61-210  
Cambridge, MA 02139  
(617) 345-6789  
[awalker@mit.edu](mailto:awalker@mit.edu)

**Home Address:**  
15 Concord Avenue  
Apt. # 2D  
Cornish, NH 03745  
(603) 546-1290

**Education**

**Massachusetts Institute of Technology** Cambridge, MA  
National Institutes of Health Postdoctoral Fellow. Department of Chemical Engineering. Research focuses on encapsulation of ribonucleic acid (RNA) into polymer nanospheres for delivery to human cells. (August 1997-present)

**California Institute of Technology** Pasadena, CA  
Ph.D. Department of Chemistry, May 1997. Thesis: Sequence-Specific Recognition of DNA in the Minor Groove by Imidazole and Pyrrole-Containing Polyamides.

**Howard University** Washington, DC  
Bachelor of Science, Chemistry, Magna Cum Laude, April 1992. Participated in summer undergraduate research program resulting in thesis and presentation. Thesis: Synthesis of Imidazole-Containing and Amidine-Linked Analogs of Distamycin.

**Kansai Gaidai** Hirakata City, Japan  
Foreign exchange student. Studies included Japanese language and intercultural communication. Lived with a Japanese family. (August - December 1991)  
Awards Carolyn Vogel Chemistry Scholarship (1989), Howard Advantage Student (1991), Phi Beta Kappa (1991), General Electric Fellowship (1992-1993).

**RESULTS: PORTFOLIO REPORTING**

**[HTTP://RD-DASHBOARD.NITRD.GOV](http://rd-dashboard.nitr.gov)**

# Implementation Features

- Features
  - Geographic visualizations
  - Capacity to combine and drilldown for custom views
  - Click through to original agency report source
- Innovations
  - Representation of scientific fields through topic modeling
  - Links to patent and firm data
  - Understanding of local, national and regional impacts by geography



# R+D Dashboard

BETA

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[Home](#) [Investments](#) [Outputs](#) [About](#) [Contact](#)

## Highlights

[Office of Science and Technology Policy of the White House - Orszag/Holdren memos to science agencies](#)

[Data Sources \(and Assumptions\)](#)

[Downloading Data and Tool Tips - making the most of this site](#)

[Important Links](#)

## The R&D Dashboard

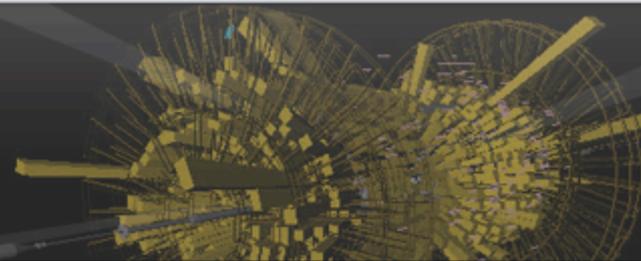
In response to the [eGov Act of 2002 Section 207](#), the R&D Dashboard beta web site provides an initial look at U.S. Federal Investments in Science and Research from two key agencies; the National Institutes of Health (NIH) and the National Science Foundation (NSF) from years 2000-2009. The R&D Dashboard will expand in a future iteration to include ALL federal research and development spending and outputs data.

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## This is a Beta Site

The R&D Dashboard is a beta site and feedback is welcome. Please direct comments or questions to our [contact page](#).



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## Grants Awarded

Use this map to discover information on Grants that are awarded in your state and congressional district.

Illinois

NIH/NSF funded

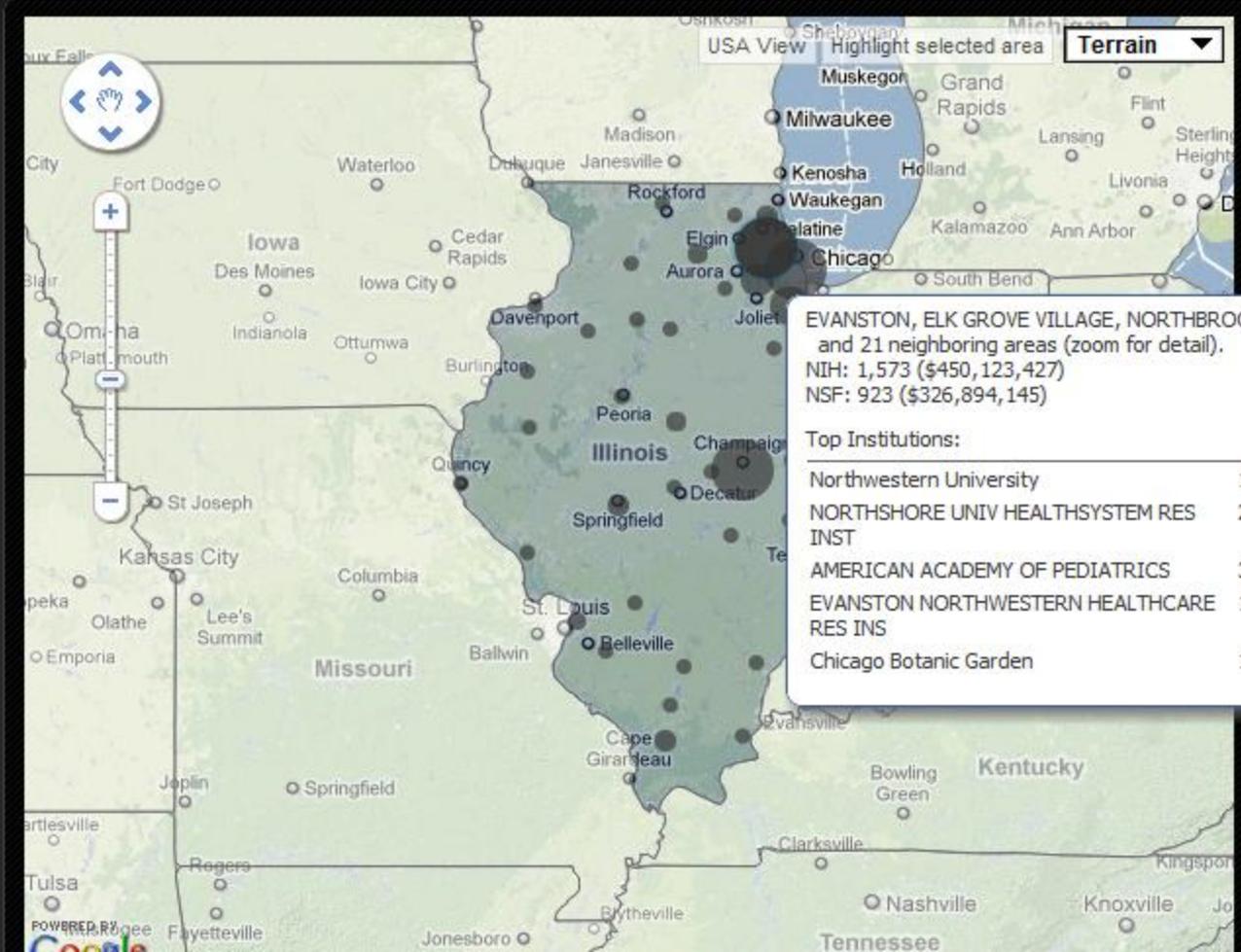
Year(s): 2001-2009

Amount: 0.00-130.00m

- ### Top Research Institutions
- University of Illinois at Urbana-Champaign
  - Northwestern University
  - University of Chicago
  - RUSH UNIVERSITY MEDICAL CENTER
  - LOYOLA UNIVERSITY CHICAGO
  - NORTHSHORE UNIV

Top Topics

Download selected data as CSV



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## Grants Awarded

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Illinois

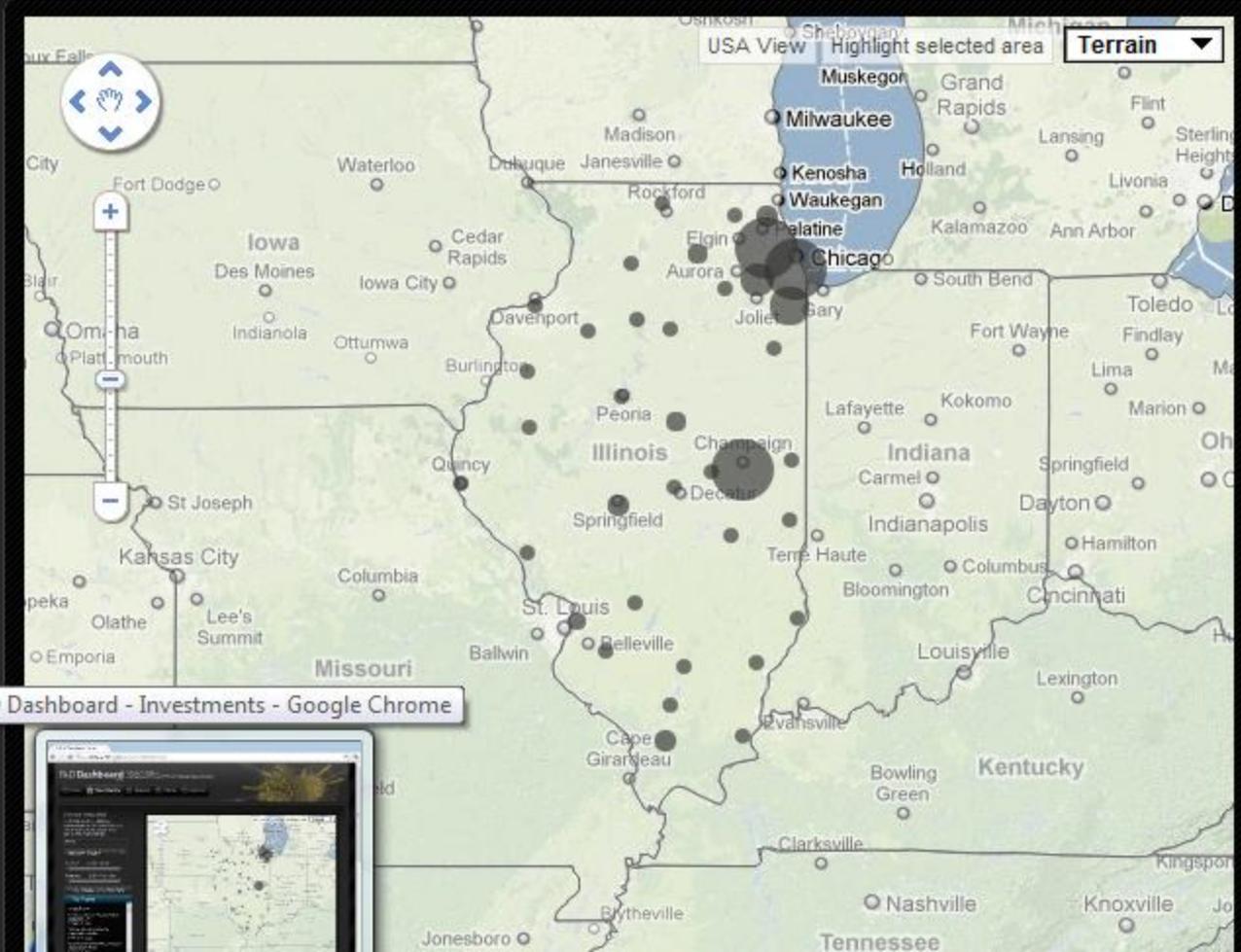
NIH/NSF funded

Year(s): 2001-2009

Amount: 0.00-130.00m

- Top Research Institutions
- Top Topics**
- Unattributed
- trainees clinical faculty fellow postdoctoral (Topic # 47)
- theory group geometry algebraic number (Topic # 123)
- conference workshop meeting researcher field (Topic # 121)

Download selected data as CSV



R+D Dashboard - Investments - Google Chrome



## Grants Awarded

Use this map to discover information on Grants that are awarded in your state and congressional district.



Year(s): 2001-2009

Amount: 0.00-130.00m

▶ Top Research Institutions

▼ Top Topics

Unattributed

trainees clinical faculty fellow  
postdoctoral  
(Topic # 47)

theory group geometry  
algebraic number  
(Topic # 123)

conference workshop meeting  
researcher field  
(Topic # 121)

Download selected data as CSV

Show 100 entries

Search:

Year	Grant Number	Federal Agency	Grant Amount	Receiving Institution
2009	<a href="#">1H75TP000325-01</a>	NIH	\$41,610,324	ILLINOIS STATE DEPT OF PUBLIC HEALTH
2009	<a href="#">0932251</a>	NSF	\$30,207,358	University of Chicago
2009	<a href="#">5U90TP516966-10</a>	NIH	\$19,985,919	ILLINOIS STATE DEPT OF PUBLIC HEALTH
2009	<a href="#">1H75TP000379-01</a>	NIH	\$12,818,323	CHICAGO DEPARTMENT OF PUBLIC HEALTH
2009	<a href="#">2U10CA031946-28</a>	NIH	\$11,457,918	UNIVERSITY OF CHICAGO
2009	<a href="#">5U90TP517008-10</a>	NIH	\$10,699,574	CHICAGO DEPARTMENT OF PUBLIC HEALTH
2009	<a href="#">5U54GM074942-05</a>	NIH	\$10,544,058	UNIVERSITY OF CHICAGO
2009	<a href="#">2U54AI057153-06</a>	NIH	\$7,494,091	UNIVERSITY OF CHICAGO
2009	<a href="#">0824618</a>	NSF	\$6,800,512	National Opinion Research Center
2009	<a href="#">0855569</a>	NSF	\$5,912,000	University of Illinois at Urbana-Champaign
2009	<a href="#">1RC2HL101651-01</a>	NIH	\$5,646,401	UNIVERSITY OF CHICAGO
2009	<a href="#">5U2GPS001285-02</a>	NIH	\$5,553,717	AMERICAN SOCIETY FOR CLINICAL PATHOLOGY
2009	<a href="#">5H23IP522565-07</a>	NIH	\$5,378,772	CHICAGO DEPARTMENT OF PUBLIC HEALTH
2009	<a href="#">5H23IP522568-07</a>	NIH	\$5,238,180	ILLINOIS STATE DEPT OF PUBLIC HEALTH

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Patents

Patent Applications

Publications

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[Important Links](#)

## Dashboard

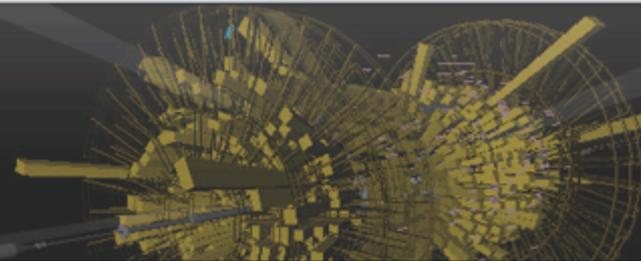
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## Patents Awarded

Use this map to discover information on Patents that are awarded in your state and congressional district.

Illinois

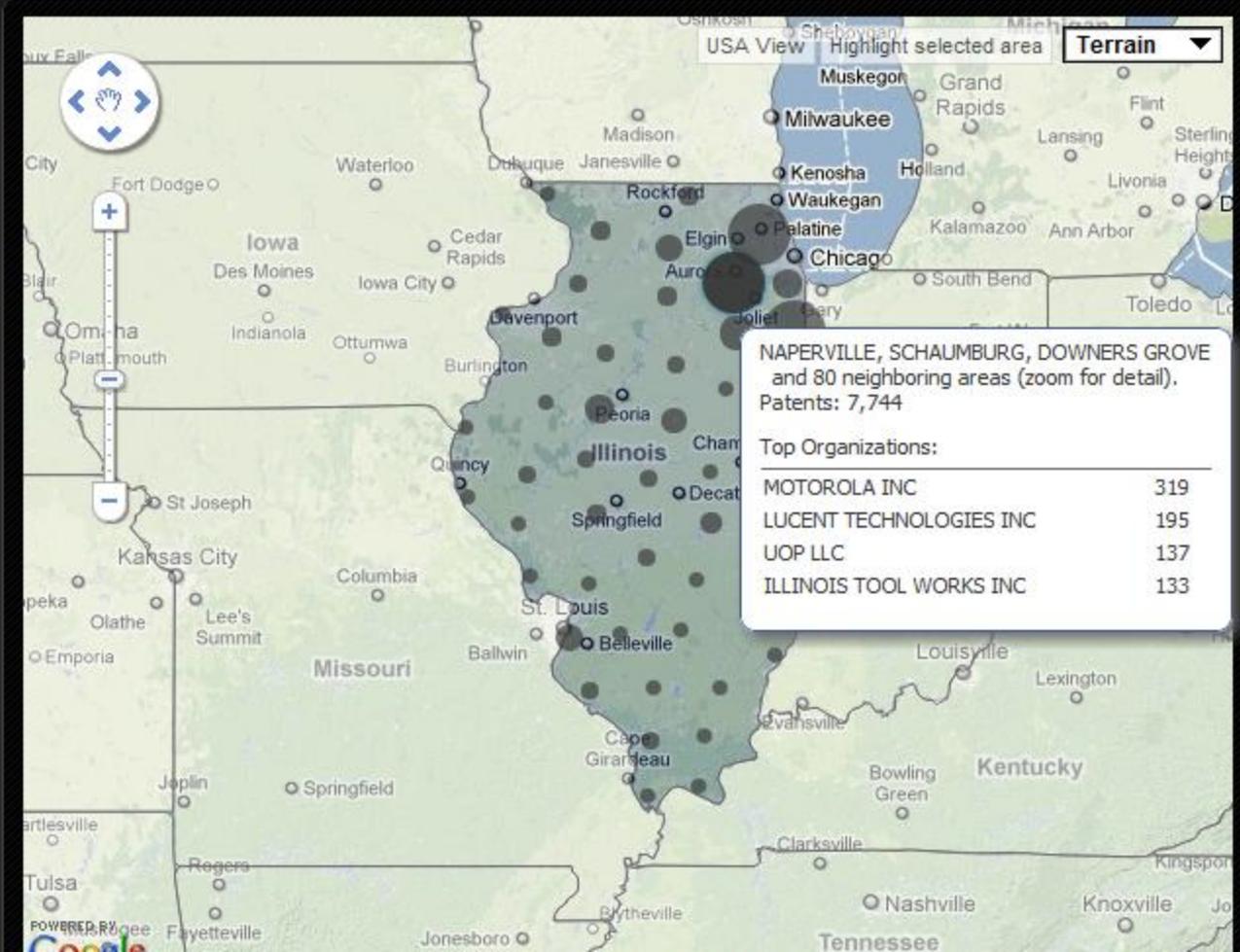
All granted patents

Year(s): 2001-2009

Citation within 2 degrees

- Top Research Institutions
- Unattributed
  - MOTOROLA INC
  - CATERPILLAR INC
  - ILLINOIS TOOL WORKS INC
  - UOP LLC
  - THE BOARD OF TRUSTEES OF THE UNIVERSITY OF ILLINOIS
  - LUCENT TECHNOLOGIES INC

Top Technologies



## Patents Awarded

Use this map to discover information on Patents that are awarded in your state and congressional district.



Year(s): 2001-2009

Citation within 2 degrees

### Top Research Institutions

- Unattributed
- MOTOROLA INC
- LUCENT TECHNOLOGIES INC
- UOP LLC
- ILLINOIS TOOL WORKS INC
- MOLEX INCORPORATED
- PANDUIT CORP
- CABOT MICROELECTRONICS

### Top Technologies

Download selected data as CSV

Show 100 entries

Search:

Patent Number	Federal Agency	Institution/Company Name	Description
D0606270		FREUDENBERG HOSEHOLD PRODUCTS LP	Mop housing
D0606398		MIDWEST PRINTING INCORPORATED	Graduated dispensing cap
D0604923		FREE GREEN CAN LLC	Refuse container
D0603322		USA WIRELESS SOLUTIONS	Windshield mounting assembly for t
D0605828		WM WRIGLEY JR COMPANY	Comestible
D0605329		FOCAL POINT LLC	Lighting fixture
D0603649		PRINCE CASTLE INC	Conveyor toaster
D0603781		CONTROL SOLUTIONS LLC	Mounting clip
D0606848		CONTROL SOLUTIONS LLC	Mounting clip
D0606849		CONTROL SOLUTIONS LLC	Mounting clip
D0599209		BONAKEMI USA INC	Liquid container
D0605907		WILTON INDUSTRIES INC	Handheld dual grater/zester
D0605232		KABUSHIKI KAISHA SEGA	Game device
D0601343		WILTON INDUSTRIES INC	Bag station
D0601663		VALMATIC VALVE MANUFACTURING CORP	Ball valve

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## Patent Applications

Use this map to discover information on Patents that were applied for in your state and congressional district.

All patent applications

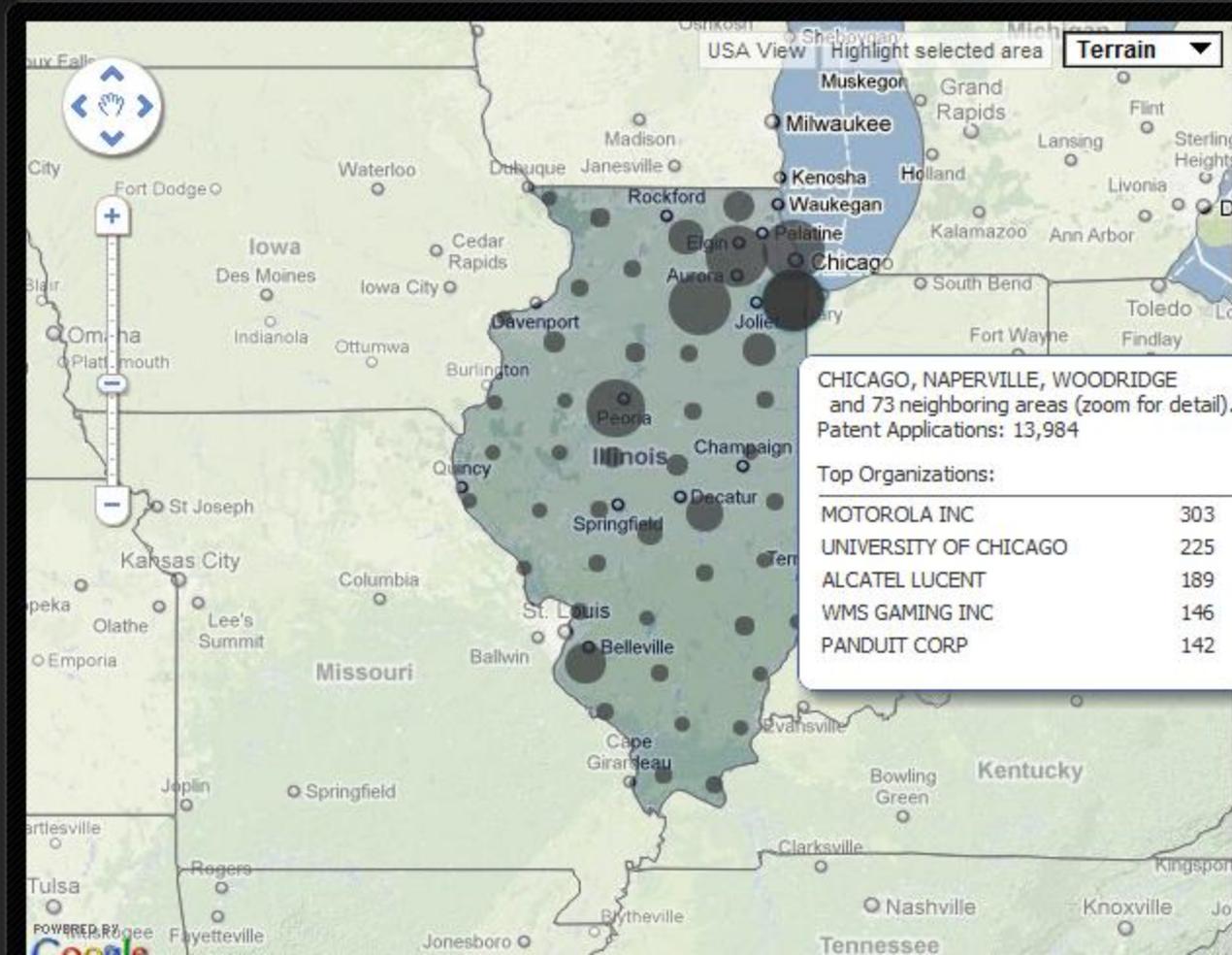
Year(s): 2001-2009

### Top Research Institutions

MOTOROLA INC  
CATERPILLAR INC  
ALCATEL LUCENT  
UNIVERSITY OF ILLINOIS-  
URBANA CHAMPAIGN  
WMS GAMING INC  
UNIVERSITY OF CHICAGO  
HONEYWELL INTERNATIONAL  
INC

### Top Technologies

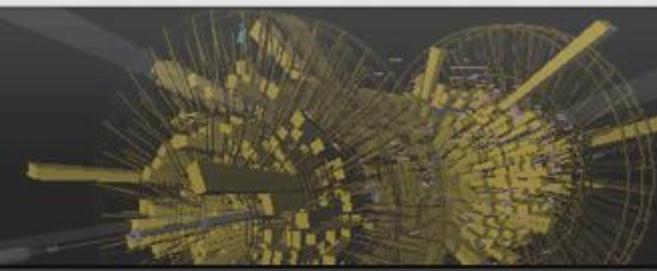
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- Home
- Investments
- Outputs
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## Publications

Use this map to discover information on Publications in your state and congressional district.

Illinois

All publications

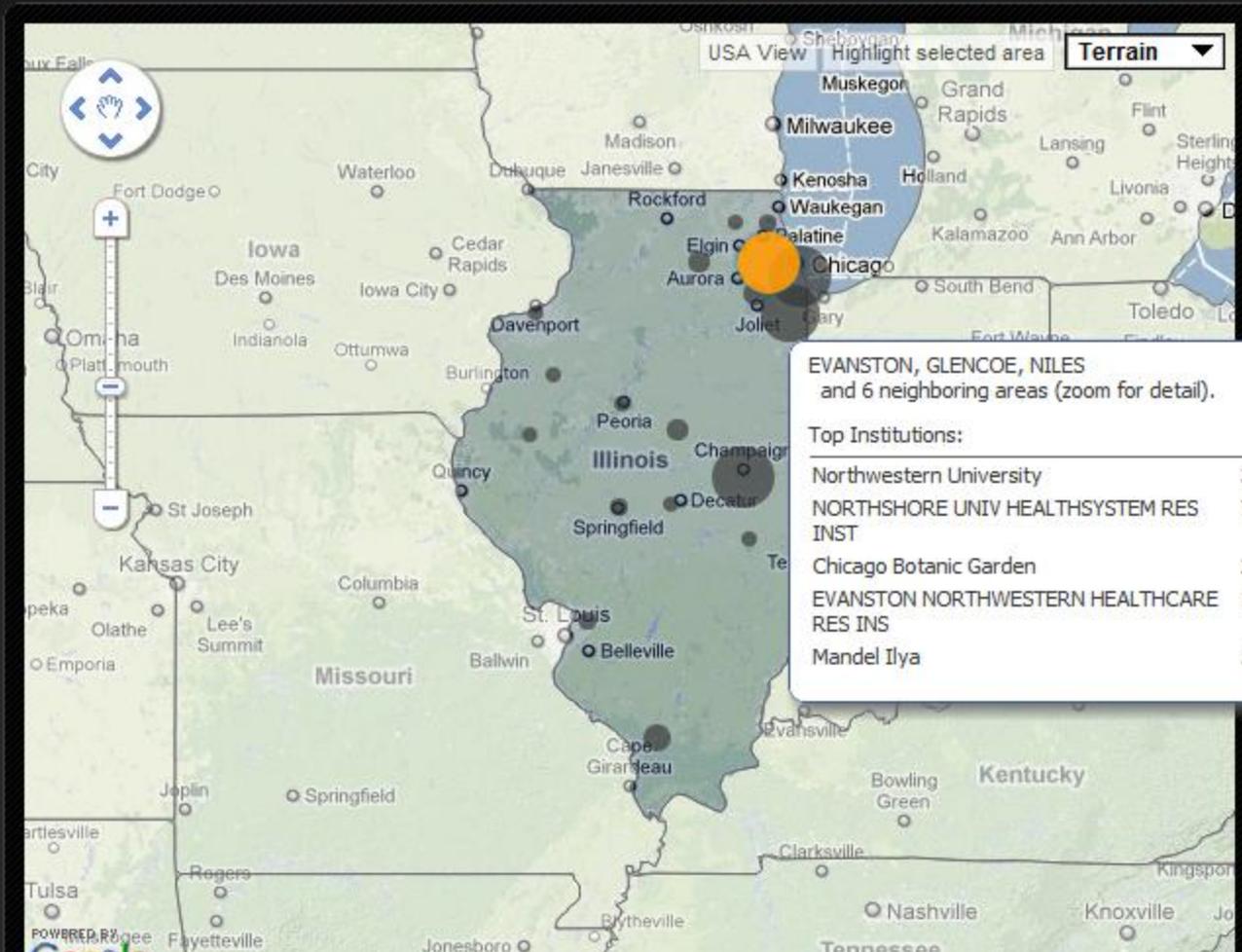
Year(s): 2001-2009

### Top Research Institutions

- Northwestern University
- NORTHSHORE UNIV HEALTHSYSTEM RES INST
- Chicago Botanic Garden
- EVANSTON NORTHWESTERN HEALTHCARE RES INS
- Mandel Ilya
- Pfaendtner Jim
- HÆMOSCOPE CORPORATION

### Top Topics

Download selected data as CSV





### Publications

Use this map to discover information on Publications in your state and congressional district.

Illinois

All publications

Year(s): 2001-2009

Top Research Institutions

Top Topics

- system computing power design performance (Topic # 200)
- material properties nano nanoparticles nanotechnology (Topic # 64)
- quantum magnetic physic material spin (Topic # 167)
- chemistry reaction metal

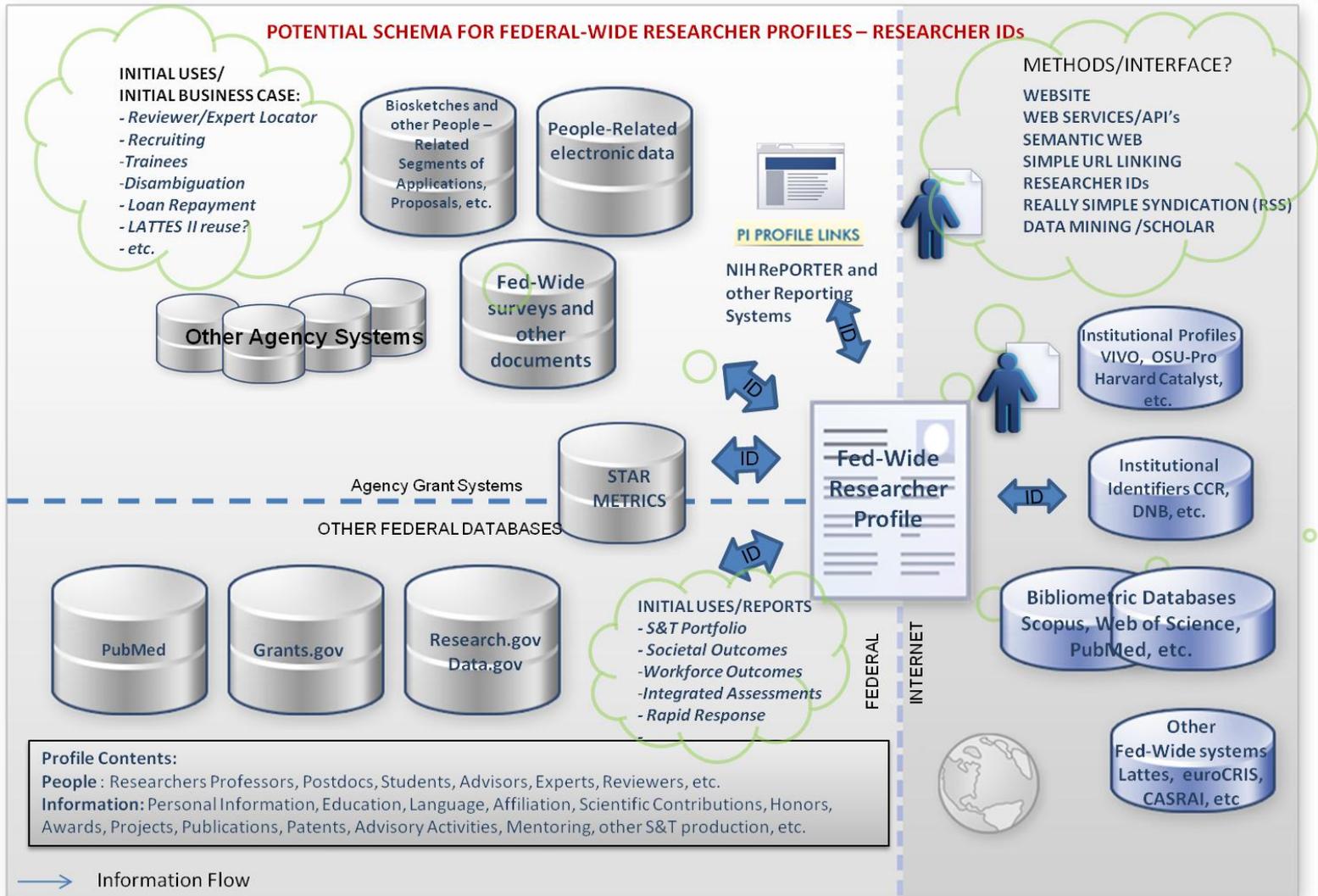
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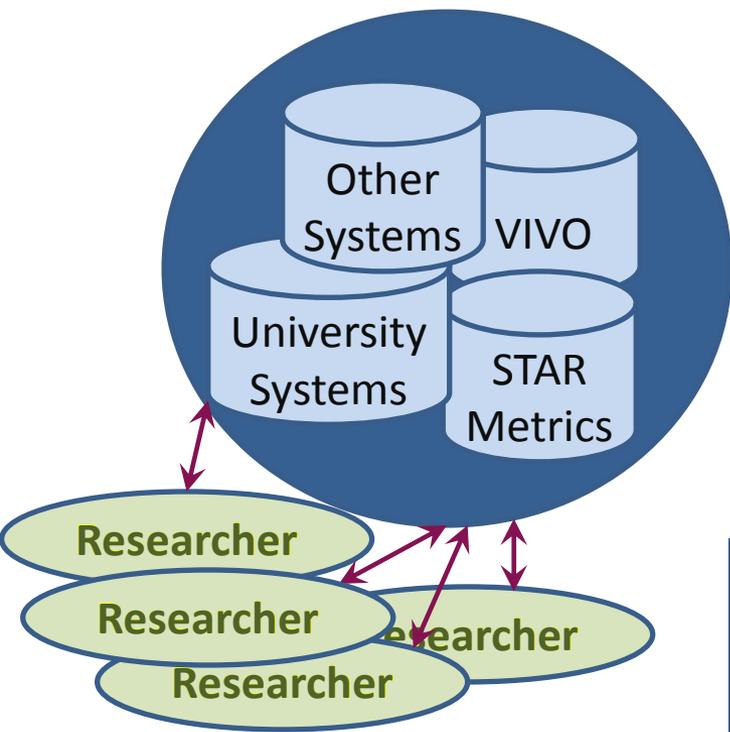
Show 100 entries Search:

Year	Publication Number	Grant Number	Federal Agency	Receiving Institution	Title
2009	<a href="#">PMID 19416951</a>	7F32NS055531-03	NIH	NORTHWESTERN UNIVERSITY	Prism adaptation reveals bias in patients with retinal junction lesions.
2009	<a href="#">PMID 19658430</a>	1R01CA126827-01A2	NIH	NORTHWESTERN UNIVERSITY	Catalytic asymmetric synthesis of isoflavanones.
2009	PUB 5768491	<a href="#">0846032</a>	NSF	Northwestern University	Energy-Information Technology Movement and Sensing
2009	PUB 5697915	<a href="#">0853573</a>	NSF	Northwestern University	Flash Reduction and Polymerization and its Polymer Comp
2009	PUB 5827147	<a href="#">0855253</a>	NSF	Northwestern University	Pitfalls of Testbed Evaluation
2009	PUB 5814599	<a href="#">0856492</a>	NSF	Northwestern University	Gd(III)-Nanodiamond Contrast Enhancement
2009	PUB 5464481	<a href="#">0901985</a>	NSF	Mandel Ilya	The Mock LISA Data Challenge 3 to Challenge 4
2009	PUB 5464482	<a href="#">0901985</a>	NSF	Mandel Ilya	The effects of LIGO detection of dimensional Markov-covariances on gravitational-wave signal
2009	PUB 5464483	<a href="#">0901985</a>	NSF	Mandel Ilya	Compact Binary Coalescence Ground-based Gravitational Wave
2009	PUB 5464484	<a href="#">0901985</a>	NSF	Mandel Ilya	Parameter estimation for multiple coalescing binary
2009	PUB 5464485	<a href="#">0901985</a>	NSF	Mandel Ilya	Third generation of gravitational observatories and the
2009	PUB 5825948	<a href="#">0917233</a>	NSF	Northwestern University	Pitfalls for Testbed Evaluation Systems
2009	PUB 5825950	<a href="#">0917233</a>	NSF	Northwestern University	Where the Sidewalk Ends

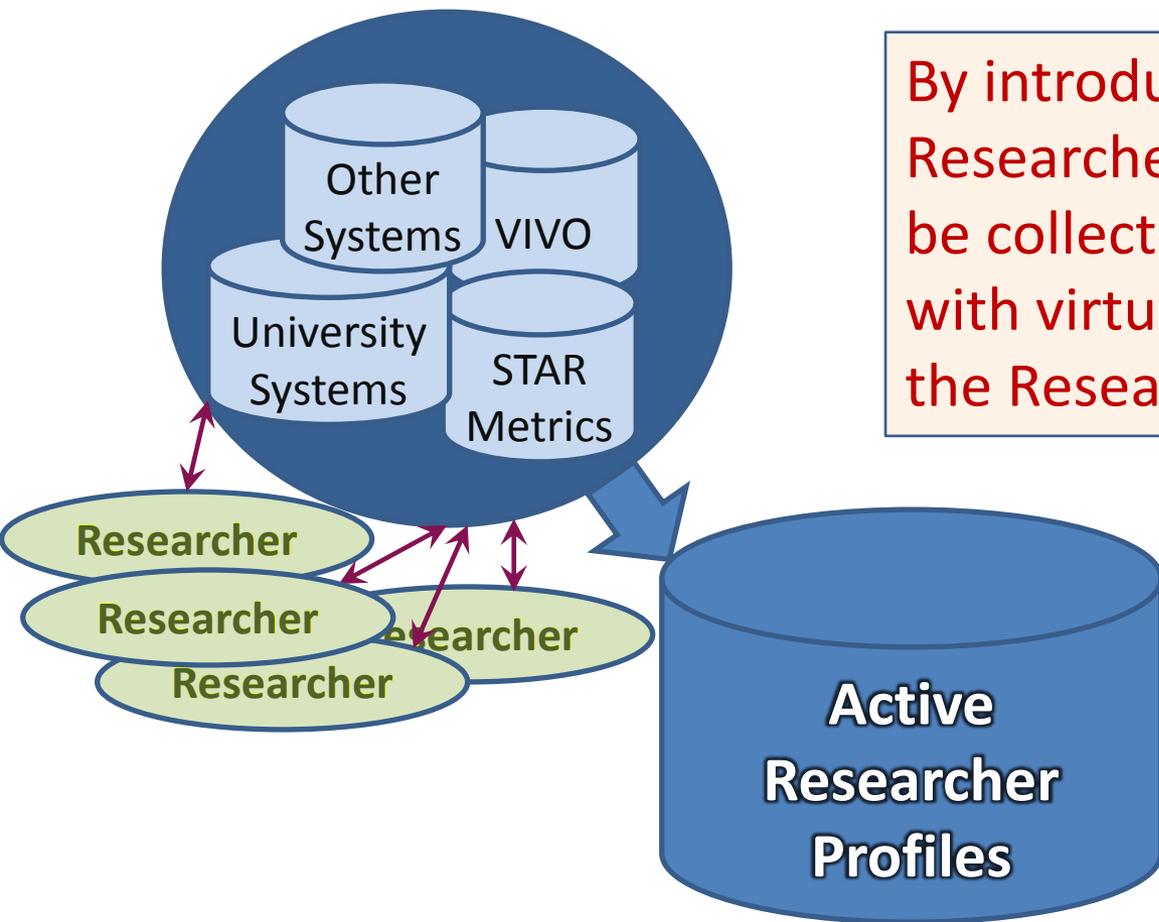
# Building a better system: Fed Wide Researcher Profile

**POTENTIAL SCHEMA FOR FEDERAL-WIDE RESEARCHER PROFILES – RESEARCHER IDS**



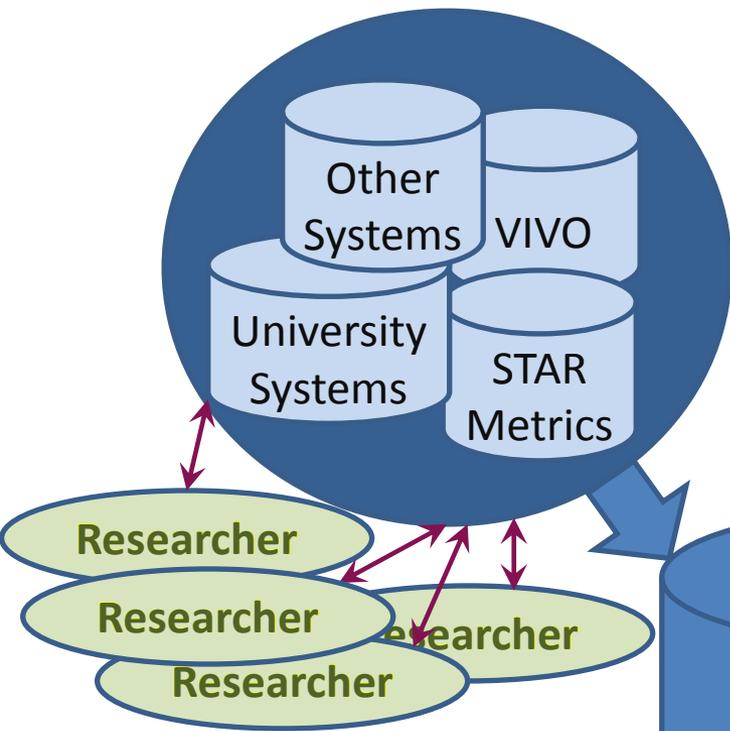


Most Researchers currently maintain a profile in one or more systems which may be existing federal systems (like eRA's Commons system) or a variety of other systems.

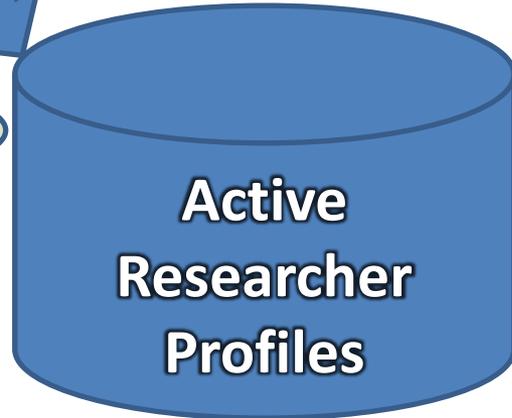


By introducing the idea of a unique Researcher ID, these profile could be collected into a master database with virtually no additional effort by the Researchers.

Whenever there is an update on any of the “feeder systems”, that update will be reflected in the master database.



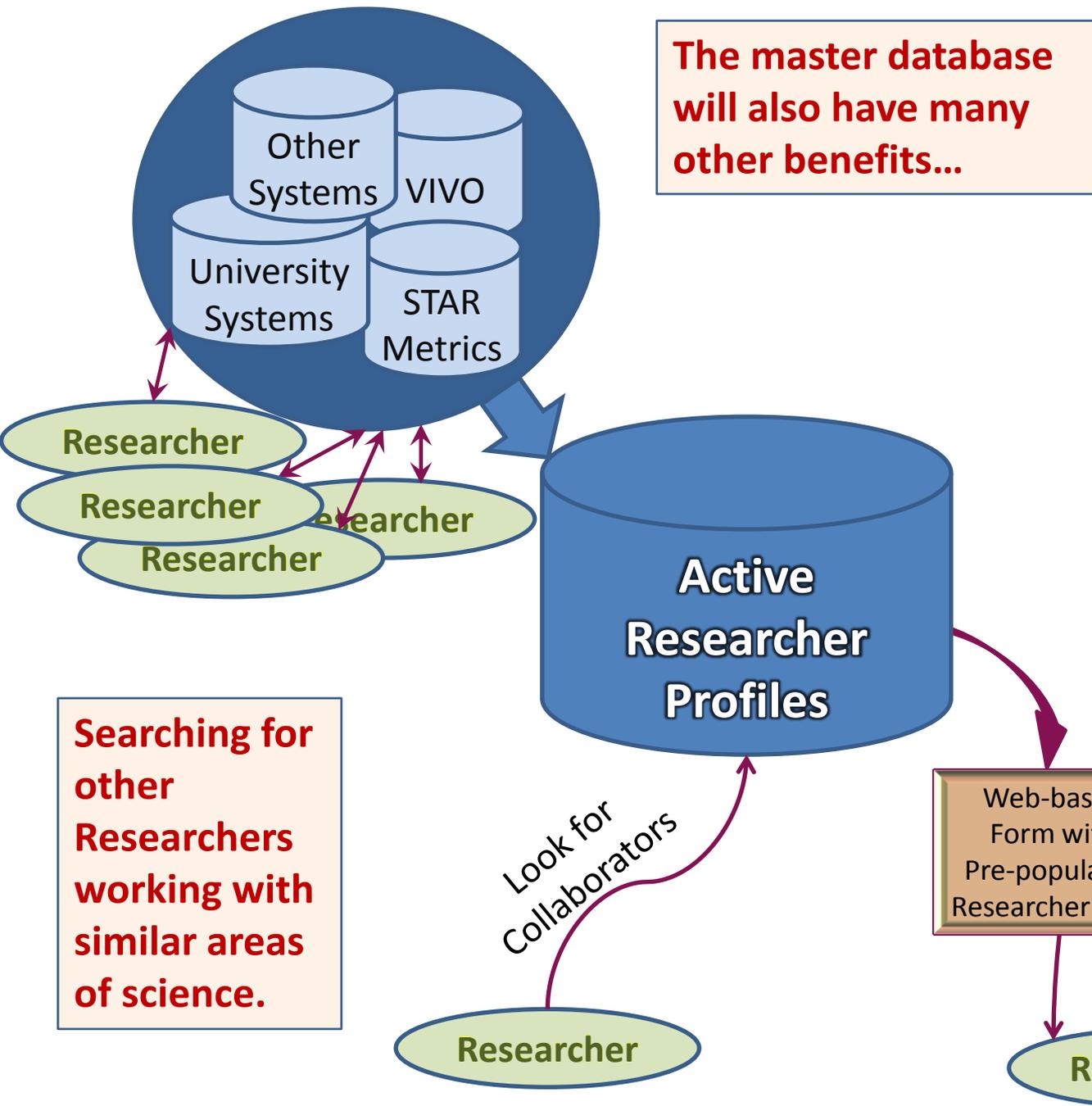
**When a Researcher wants/needs to interact with a federal agency, significant time can be saved by pre-populating the web "form".**



Funding Application, Financial Report, Etc. with ID



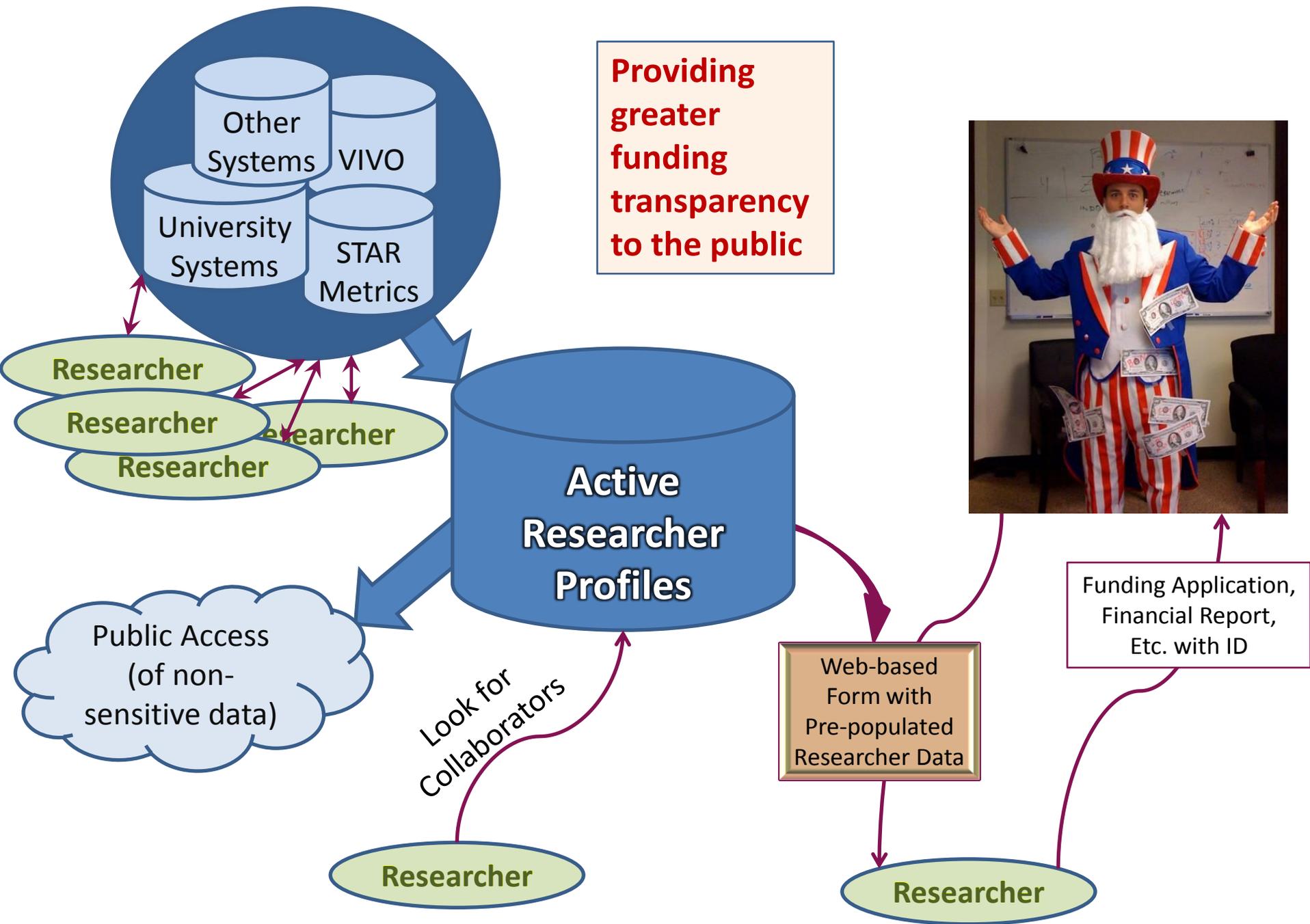
**Of course, any profile updates or corrections made by the Researcher would be reflected back into the master database.**



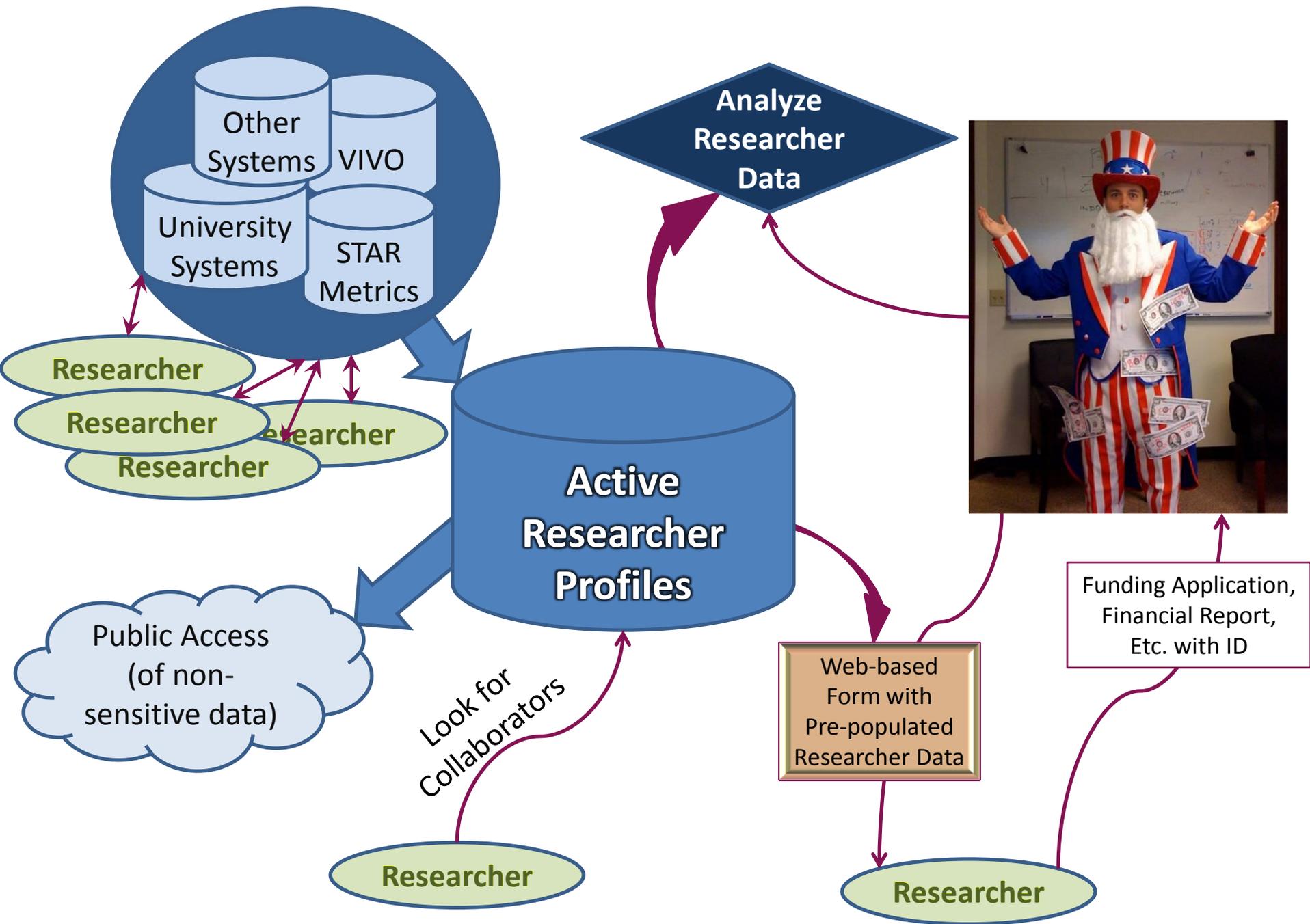
Funding Application,  
Financial Report,  
Etc. with ID

Web-based  
Form with  
Pre-populated  
Researcher Data

Researcher







# Next Steps:

## Expansion

- Additional agencies joining
- Additional research institutions

## Implementation of Level II

- Build out fed-wide researcher profile (in conjunction with RBM)
- R&D Dashboard
- Joint development of platform, tools and visualizations

# Reminder of why this matters

- You can't manage what you can't measure
- What you measure is what you get

=> Systematic rethinking of way we capture data and engage scientific community in measurement of the innovation ecosystem – platform, data, methods and tools

# Thank you

- Contact information
  - Stefano Bertuzzi [stefano.bertuzzi@nih.gov](mailto:stefano.bertuzzi@nih.gov)
  - Kei Koizumi [Kei\\_Koizumi@ostp.eop.gov](mailto:Kei_Koizumi@ostp.eop.gov)
  - Julia Lane [jlane@nsf.gov](mailto:jlane@nsf.gov)