



**Industrial Research Office Overview
presented at the
Networking and Security Research Center
Industry Day**

Speaker: John Siggins

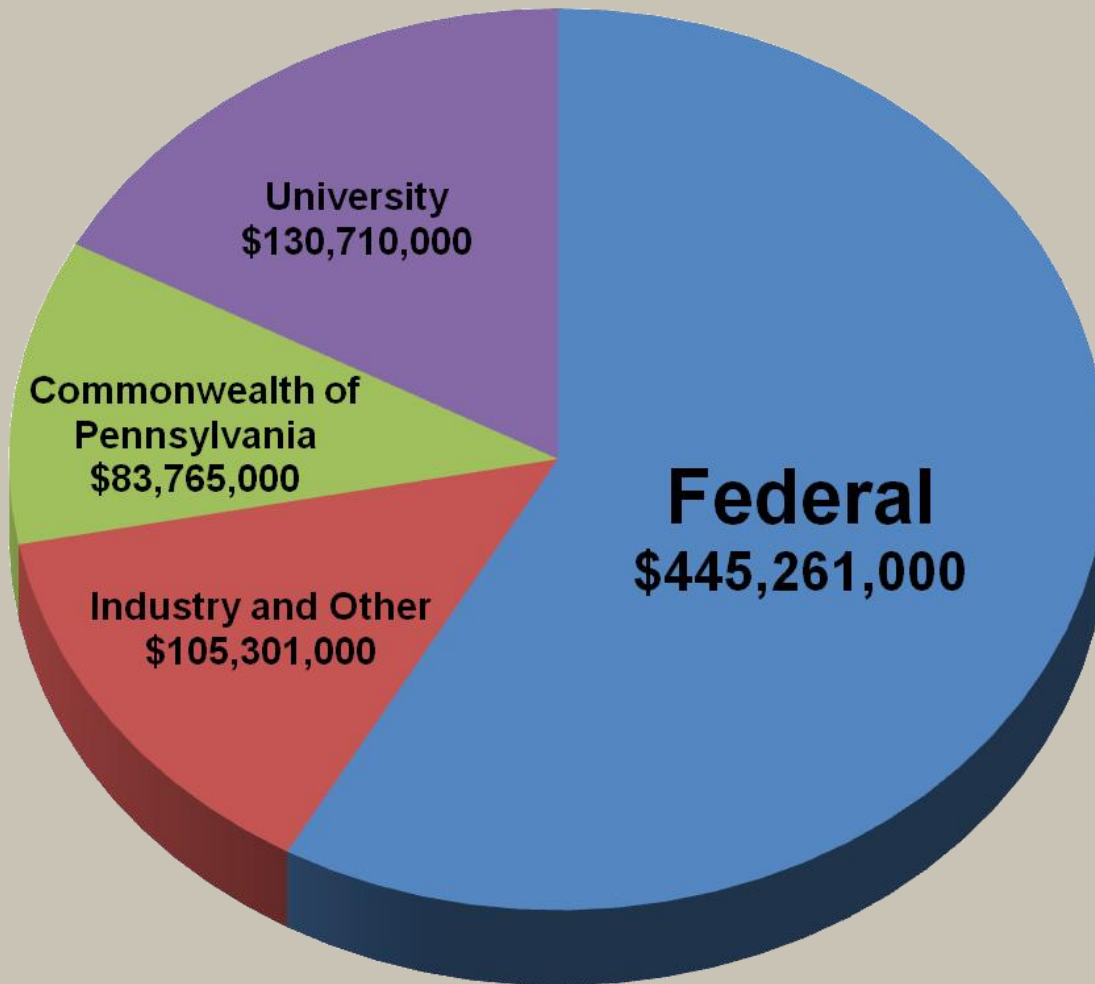
October 13, 2009

PSU At A Glance

www.techtransfer.psu.edu

- Enrollment (FA 2009)
 - Undergraduate, total 79,135
 - Undergraduate, University Park 37,988
 - Graduate, total 13,478
 - Graduate, University Park 6,124
- Faculty
 - Full-time, total 6,000+
 - Full-time, University Park 3,200
- Total Operating Budget (FY 07-08) \$3.61 Billion
- Alumni Association membership 160,000+

Research Expenditures by Source of Funds



**FY2009 Total =
\$765,037,000**

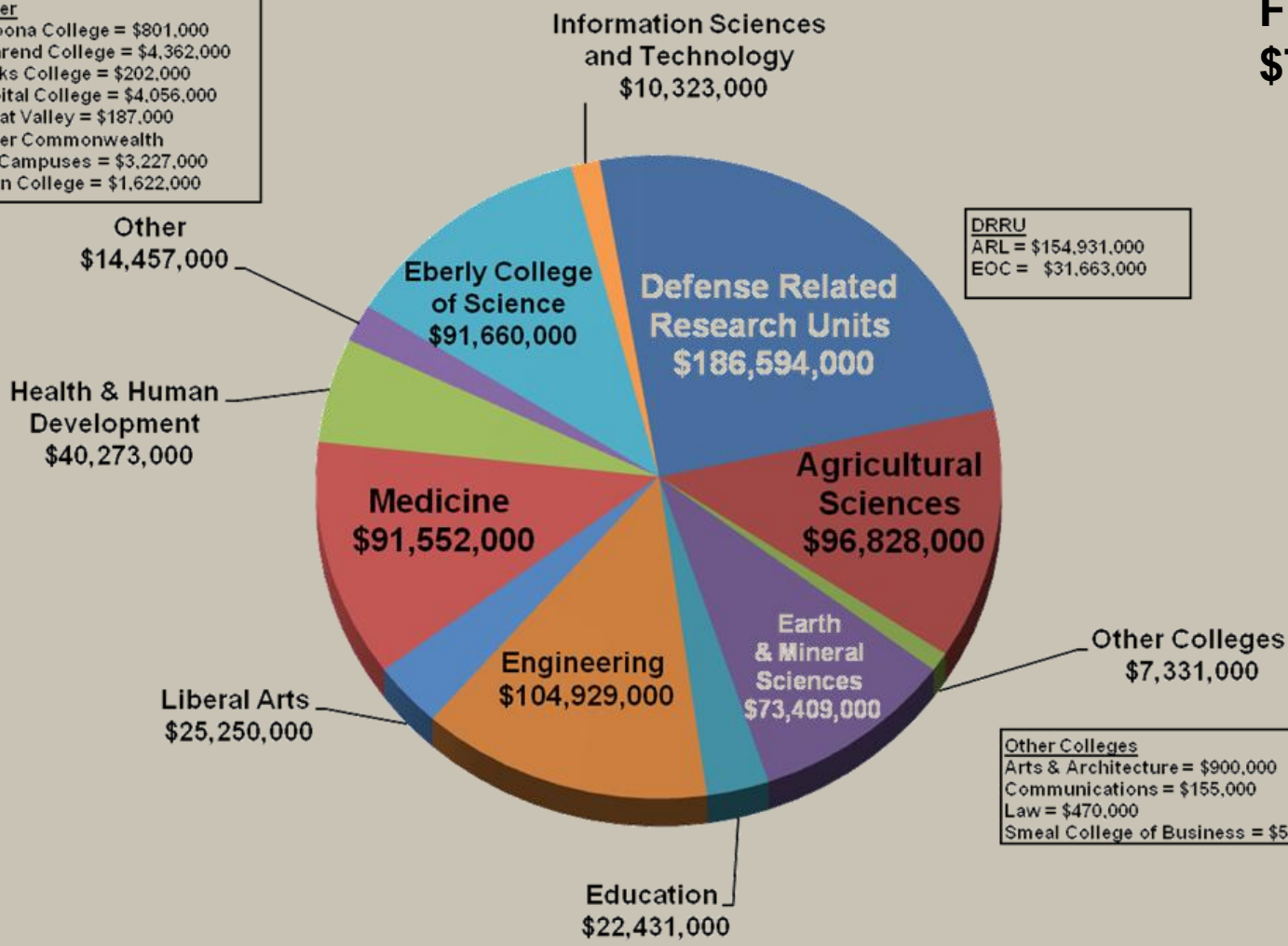
Research Expenditures By College

**FY2009 Total =
\$765,037,000**

Other
 Altoona College = \$801,000
 Behrend College = \$4,362,000
 Berks College = \$202,000
 Capital College = \$4,056,000
 Great Valley = \$187,000
 Other Commonwealth
 Campuses = \$3,227,000
 Penn College = \$1,622,000

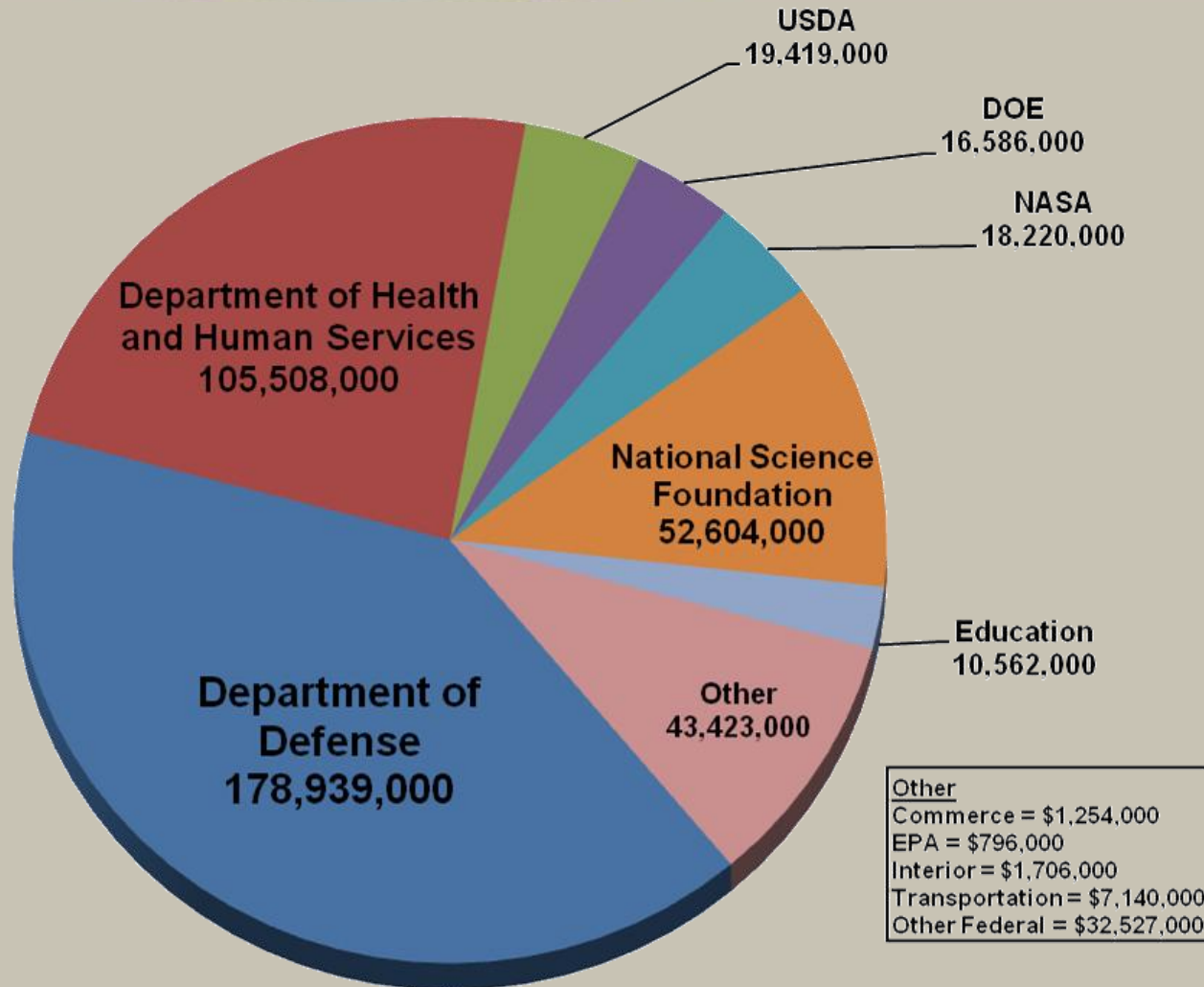
DRRU
 ARL = \$154,931,000
 EOC = \$31,663,000

Other Colleges
 Arts & Architecture = \$900,000
 Communications = \$155,000
 Law = \$470,000
 Smeal College of Business = \$5,132,000

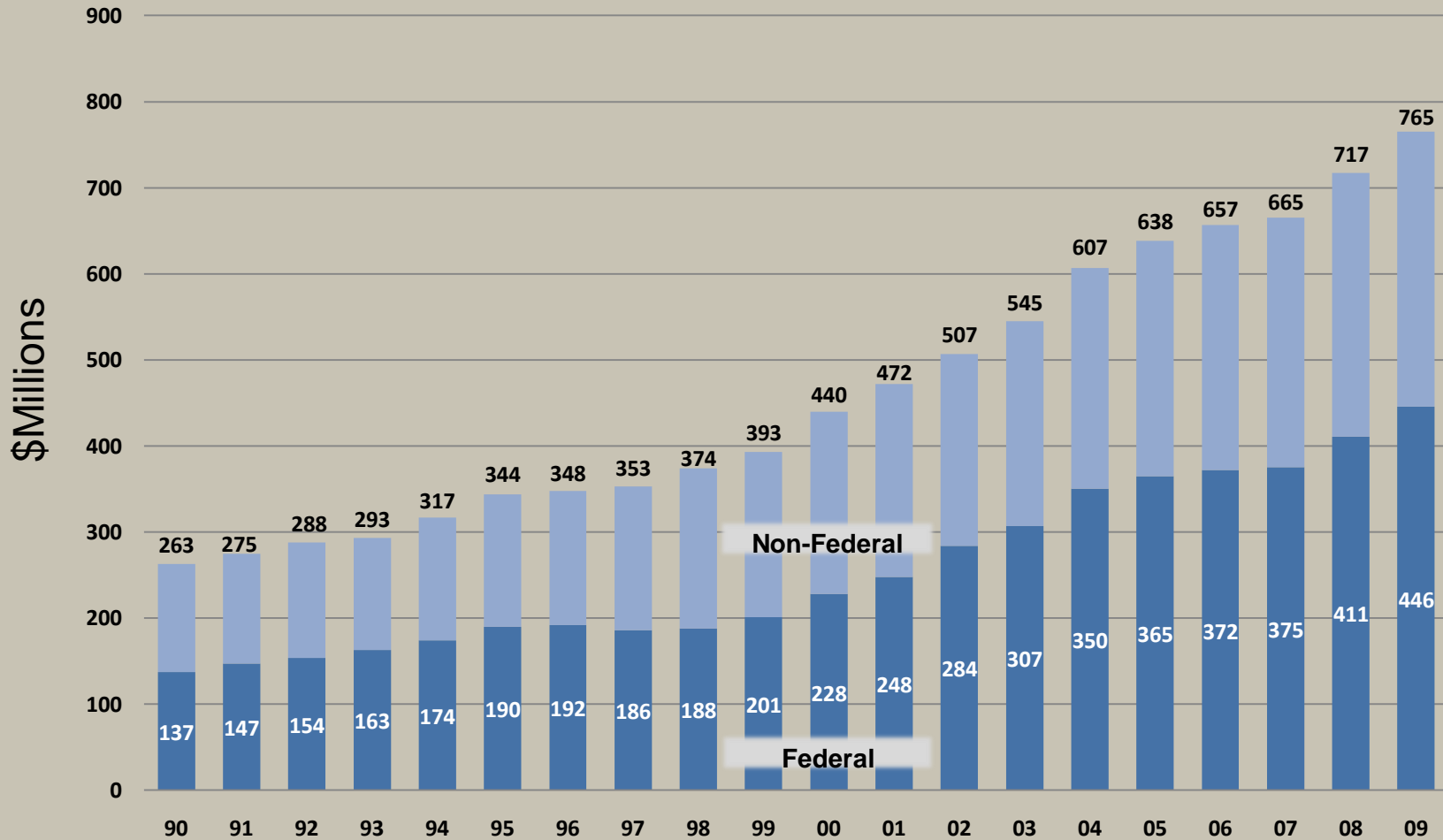


Research Expenditures from Federal Agencies

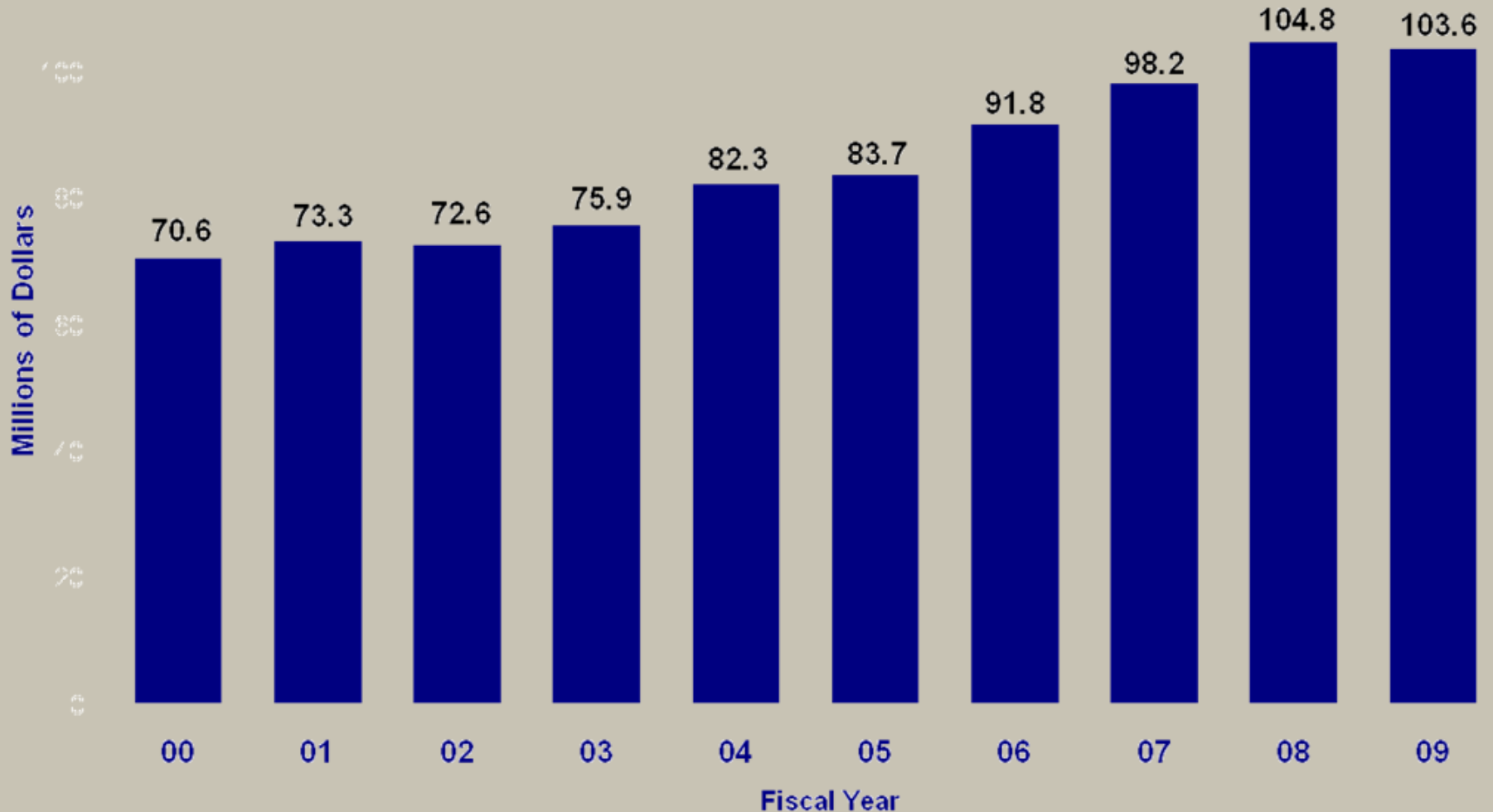
**FY2009 Total =
\$445,261,000**



Penn State Total Research Expenditures – 20-year History



Penn State Industry and Private Research Expenditures



NSF Total S&E Research Expenditure Rankings for FY2008 (Released October 2009)

Top Twenty Overall by NSF Fields and Subfields

	FY2008 Ranking	FY2007 Ranking	FY2006 Ranking	Industry	Total Engineering	Aero/Astro-Engineering	Bio-Engineering	Chemical Engineering	Civil Engineering	Eng - Electrical	Eng - Materials	Eng - Mechanical	Total Physical Sciences	Chemistry	Physics	Astronomy	Total Environmental Sci	Atmospheric	Earth Sciences	Oceanographic	Mathematical	Computer Science	Total Life Sciences	Agricultural	Biological	Medical	Psychology	Total Social Sciences	Economics	Political Science	Sociology	Number In Top Ten Fields/Subfields	
Johns Hopkins	1	1	1	21	1	1	4	11	15	1	83	1	3	18	2	3	14	14	63	18	2	5	2	-	9	3	84	88	82	158	64	13	
UC San Francisco	2	2	5	13	-	-	-	-	-	-	-	-	47	9	-	-	-	-	-	-	-	-	1	-	92	1	-	-	-	-	-	3	
Wisconsin	3	3	2	35	18	-	53	27	25	36	48	47	11	25	11	18	8	1	42	49	26	16	6	31	5	12	29	3	17	37	14	5	
Michigan	4	5	4	18	6	22	11	22	20	6	17	7	22	23	20	22	66	-	23	-	29	54	9	57	13	18	19	1	2	1	3	8	
UCLA	5	4	3	12	35	54	74	46	75	15	28	17	10	10	9	-	68	24	54	-	25	19	4	-	105	2	16	9	66	96	21	6	
UC San Diego	6	6	7	11	19	-	12	-	-	5	-	27	17	15	10	-	1	16	5	3	40	7	13	160	82	6	31	39	56	17	34	7	
Duke U.	7	7	10	1	56	-	8	-	60	29	-	59	59	70	37	-	43	-	61	38	20	72	3	-	7	5	89	23	79	5	25	5	
U. Washington	8	8	6	5	24	32	5	53	16	17	39	38	28	17	35	23	5	6	41	4	35	80	8	46	33	7	32	32	-	10	33	7	
Penn	9	12	9	10	68	-	27	35	-	56	29	57	39	31	28	-	213	-	146	-	74	45	5	101	8	9	58	12	48	4	16	4	
Ohio State	10	9	11	2	11	41	81	1	26	21	3	3	34	36	26	27	70	-	26	-	8	11	20	13	35	22	45	8	5	29	19	6	
Penn State 2008	11	11	13	3	3	14	46	6	17	3	1	4	15	11	13	13	11	8	6	29	6	8	51	10	69	63	1	14	43	11	2	12	
Stanford	12	10	8	7	12	21	10	26	35	11	61	6	13	16	61	-	35	-	24	42	15	17	19	-	97	8	26	35	64	99	72	3	
Minnesota	13	14	15	24	29	31	47	16	10	43	106	15	41	43	30	33	52	-	31	55	11	20	11	12	43	11	9	13	8	16	7	4	
MIT	14	15	14	4	4	7	1	3	28	13	11	12	4	6	3	7	25	19	21	34	32	9	52	-	6	118	145	69	39	33	-	10	
Cornell	15	13	12	28	23	-	57	49	46	22	27	25	7	14	7	9	49	-	40	80	33	15	18	28	27	20	66	18	7	102	8	5	
UC Davis	16	16	16	22	28	-	6	13	7	48	-	32	43	48	64	-	24	41	71	40	48	46	14	2	15	35	88	17	20	32	66	3	
U. Pittsburgh	17	19	21	66	96	-	30	41	110	129	89	65	48	32	71	43	163	-	108	-	79	67	7	-	115	4	42	109	100	69	114	2	
UC Berkeley	18	20	19	16	8	-	124	33	2	4	125	178	5	2	24	2	67	80	25	-	18	-	65	16	57	79	21	4	1	23	12	8	
Florida	19	17	17	23	20	19	18	52	6	31	13	36	40	37	38	24	75	-	43	51	27	73	17	1	22	48	23	33	12	89	54	2	
Texas A&M	20	22	24	14	5	6	29	10	1	45	26	9	29	20	27	85	2	23	49	2	14	34	66	8	55	95	90	26	9	64	74	9	
Penn State 2007				3	3	12	39	3	16	4	1	4	15	16	11	15	11	10	6	33	8	8	52	11	74	62	1	14	53	16	1	11	
Penn State 2006				3	3	14	35	3	13	4	1	4	9	9	12	14	12	11	7	26	7	11	51	11	73	59	2	16	47	22	1	11	
Penn State 2005				2	3	20	35	1	11	4	1	3	9	11	11	12	13	10	8	31	6	11	50	9	78	58	2	16	45	18	1	12	
Penn State 2004				2	3	12	33	4	7	4	1	3	9	5	12	11	14	11	7	33	8	8	48	8	72	61	2	16	47	17	1	14	
Penn State 2003				3	4	20	29	3	4	5	1	4	11	10	10	12	10	10	5	41	14	15	50	7	76	63	2	13	53	13	1	14	
Penn State 2002				3	3	22	17	3	3	4	1	4	12	9	10	11	20	13	6	48	13	61	47	6	81	62	4	13	47	31	2	12	
Penn State 2001				3	3	24	28	3	3	4	1	5	10	4	12	8	24	15	5	48	14	49	48	6	81	66	2	16	34	33	2	13	



**Senior Vice President for Research
Dean of the Graduate School
Eva J. Pell**

Assistants to the Senior Vice President
Virginia B. Imboden
Janis E. Smith

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Vice Dean for Research and Graduate Studies
Chief Scientific Officer
College of Medicine
Alan Snyder, Interim

Associate Vice President for Research
Director, Strategic Initiatives
Coordinator, Worldwide University Network
Peter E. Schiffer

Assistant Vice President for Research
Director, Office of Sponsored Programs
David W. Richardson

Assistant Vice President for Research & Technology Transfer
Director, Intellectual Property Office
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Research Information Systems
Chris D. Lose, Interim Director

Ben Franklin Technology Center
Stephen P. Brawley, Director

Industrial Research Office
Tanna Pugh, Director

Innovation Park & Research Commercialization
Daniel R. Leri, Director

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Defense-Related Research Units
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Director, Institute for the Arts & Humanities
Marica S. Tacconi

Director, Penn State Institutes of Energy and the Environment
Thomas L. Richard

Director, Applied Research Laboratory
Edward G. Liszka

Director, Electro-Optics Center
Karl A. Harris

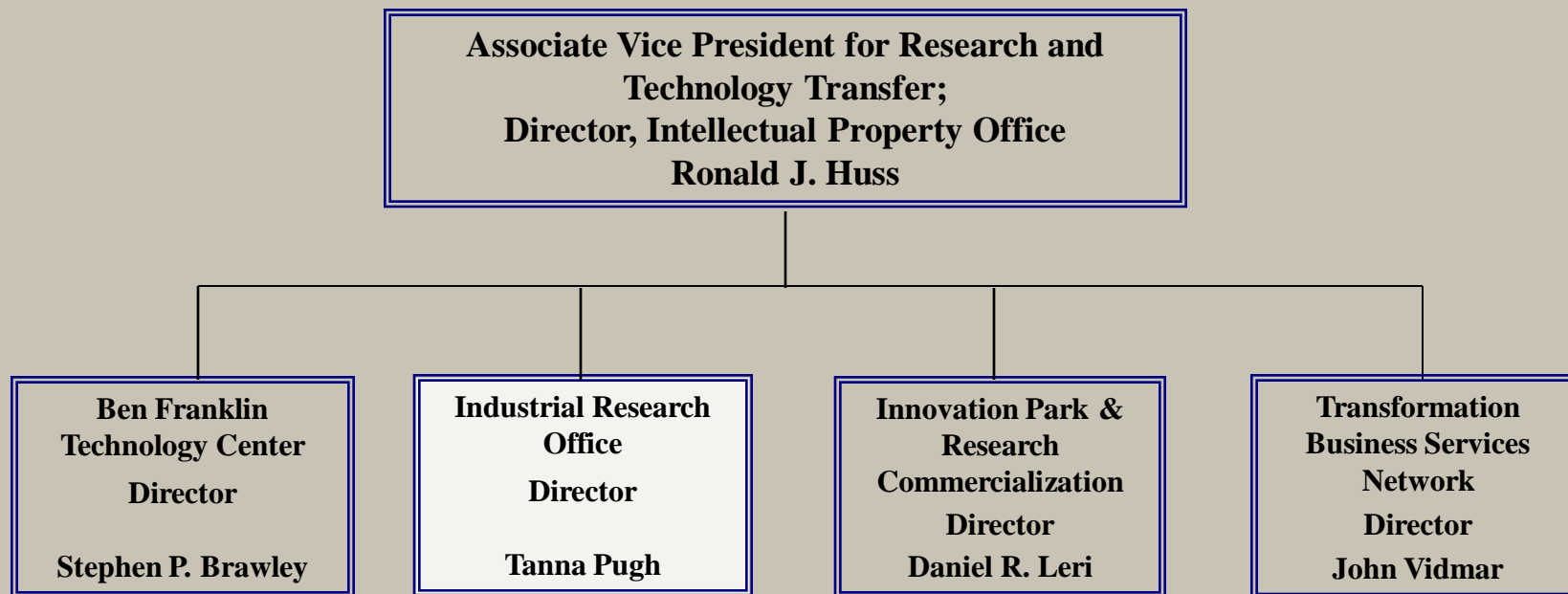
Director, Huck Institutes of the Life Sciences
Peter J. Hudson

Director, Materials Research Institute
Carlo G. Pantano

Director, Social Science Research Institute
Director, Children, Youth, & Families Consortium
Susan M. McHale

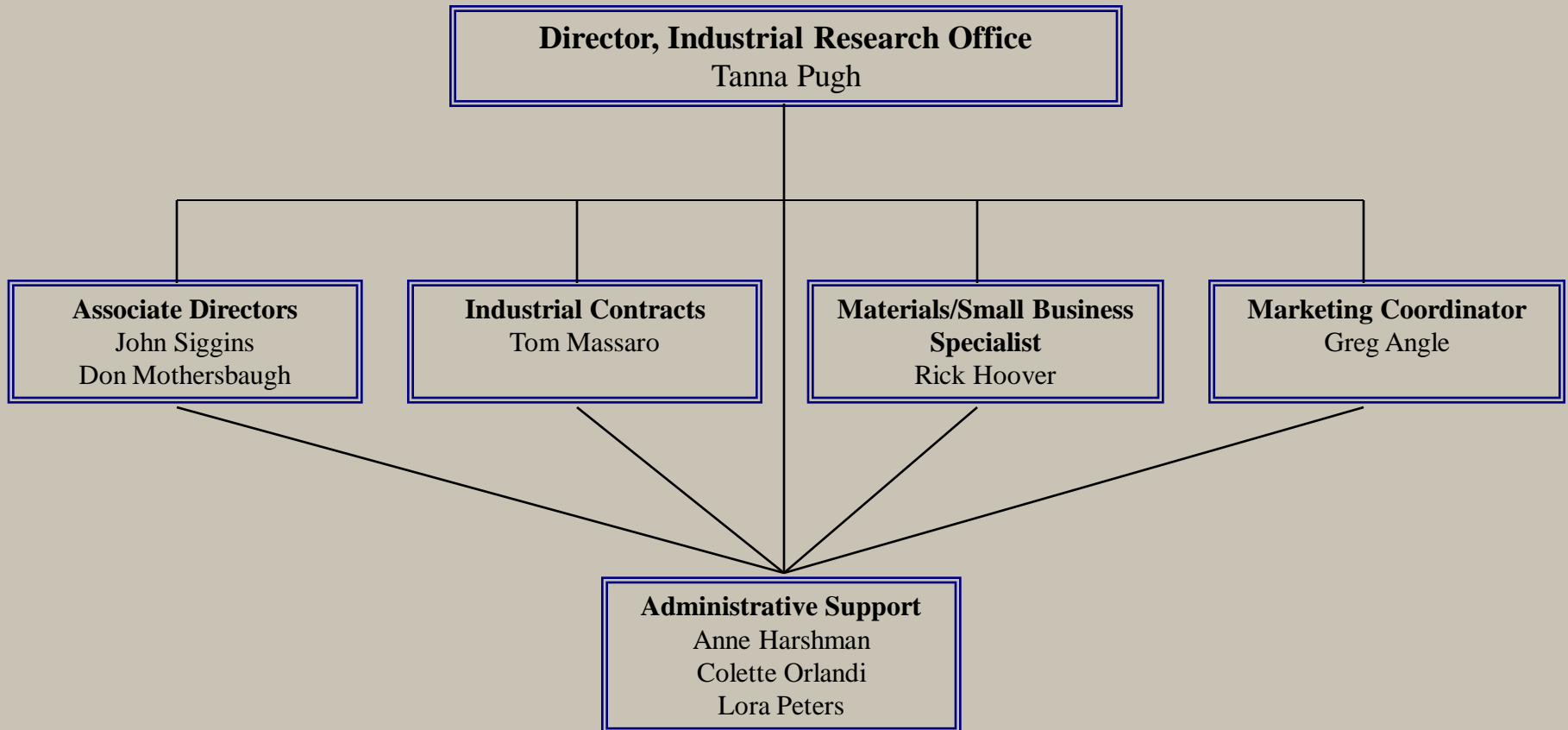
Director, Institute for Computational Science
Padma Raghavan

Research and Technology Transfer Organization



Industrial Research Office

www.techtransfer.psu.edu



IRO Mission Statement

www.techtransfer.psu.edu

To create and grow lasting relationships between business and the Penn State research community, leading to solutions that enhance your competitive position in the global marketplace while preserving our role as a premier educational institution.

Research Expenditures: Industry-Sponsored

Rank	Institution	2005	2006	2007
	All institutions	2,293,821	2,403,546	2,672,333
1	Duke U.	134,608	132,996	181,072
2	Ohio State	81,423	106,252	142,177
3	PENN STATE	87,928	89,170	93,535
4	MA Institute of Technology	72,121	75,790	81,570
5	U. WA	45,281	56,765	63,560
6	Purdue	46,571	45,549	55,979
7	Stanford	34,072	34,637	54,181
8	USC	23,177	24,952	48,618
9	U. CA, San Francisco	34,175	35,621	45,659
10	GA Tech	33,117	37,279	45,651

****2007 is the most recent ranking available from the NSF***

Industry-sponsored R&D expenditures at universities and colleges.
Ranked by fiscal year 2007 industry-sponsored R&D expenditures.
Source: National Science Foundation

Private Industry

www.techtransfer.psu.edu

PSU

PSU expended
 \$93,535,000 in
 industry funding for
 R&D in FY07

Source: NSF Statistics, Table 33

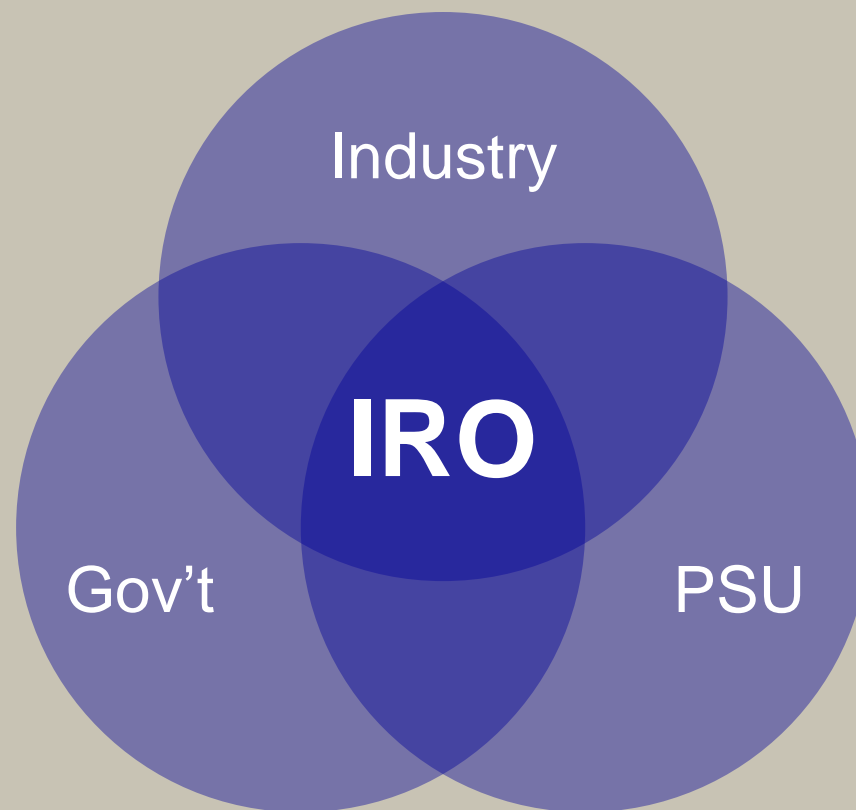
http://www.nsf.gov/statistics/nsf09303/content.cfm?put_id=3871&id=2

Other PA Universities

Carnegie Mellon	\$12,980,000
Drexel Univ	2,403,000
Lehigh Univ	2,154,000
Temple Univ	5,806,000
Univ of PA	42,427,000
Univ of Pgh	<u>10,153,000</u>

Total **\$75,923,000**

Nexus of Opportunity & Information



KEY STRENGTH of Industrial Research Office:

- **Knowledge of entire University**
- Focus on uncovering researchers in all Colleges and Departments (including ARL) to meet industry needs

Contracting Support:

- Multiple Contracting Tools & Industrial Contracts Specialist
 - Master Agreement
 - Sponsored Projects Agreement
 - Fixed Price Agreement
 - Research Services Agreement
- Assist with necessary Confidentiality Agreements

- Outcomes
 - Over 45 active master agreements
 - Leveraged relationships leading to increased federal funding
 - Multiple Colleges, Departments and faculty engagements

Master Agreement Relationships

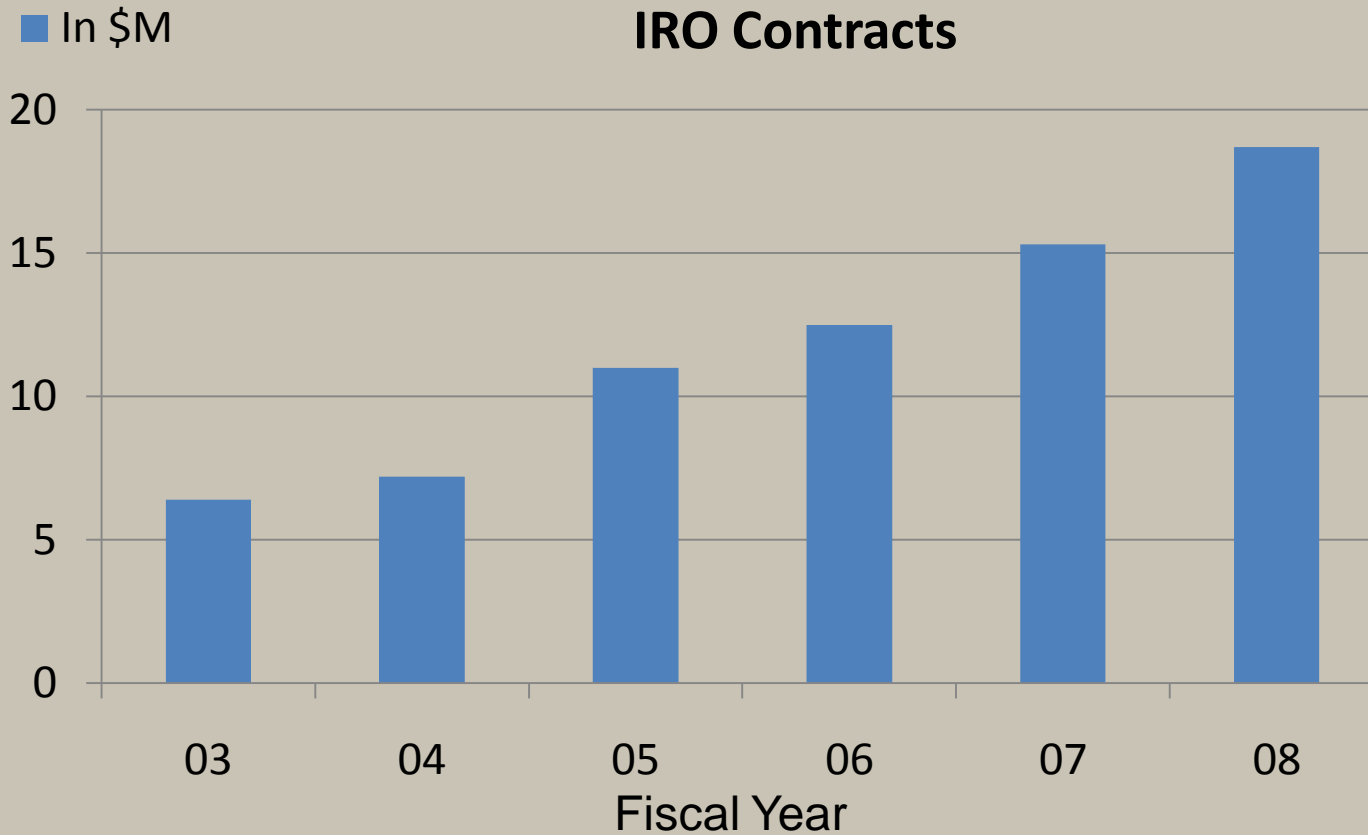
Industry Partner	Total Research \$	Task Order Research \$	Breadth
Lockheed Martin	\$8,406,310	\$4,093,961	91 unique faculty 13 colleges/units 32 departments
Air Products and Chemicals, Inc.	\$8,587,559	\$3,694,517	79 unique faculty 9 colleges/units 22 departments

FY09 YTD

- 98 unique faculty from 11 Colleges have been included in industry meetings on campus
- Over 200 company interactions including meetings on campus, conference calls and visits to company sites
- Invited to participate, organize and assist with industry involvement on over 10 centers/institutes/workshop meetings

IRO Metrics (Contracting Results)

FY	# Companies	# Projects	New Master Agreements
2008	44	164	8
2007	42	197	12
2006	56	174	12
2005	46	125	2
2004	40	103	5



Efforts to Engage Industry

www.techtransfer.psu.edu

- **Marketing**
 - Trade Shows and Conferences
 - Members of Professional Organizations
 - Support On Campus Events & Center Meetings
 - The “IRON” – The Industrial Research Office Newsletter

- **Consultative Sales Approach**
 - Develop Alliance Relationships
 - Arrange & Host Company Visits
 - Follow Up Internally & Externally
 - Handle Contracting

Some Background....

- Center founded in 2003
- The NSRC provides a focal point for PSU professors, students, and collaborators from industry interested in networking and security to Communicate and Collaborate.
- NSRC has raised almost \$17 million since 2005 from federal or state-based funding agencies

How does the Center Operate?

- **Communication:**

- Annual “Industry Day” meetings
- Short Courses & Workshops
- Direct interactions one-on-one w/ members

- **Collaboration:**

- Center funded Research Projects
- PSU Professors can also:
 - Do Contract Research directly with industry members
 - Consult directly with industry members
 - Team with industry to target Fed/State funding Opps

Joining the Center....

- Full Membership: \$50,000/year (“Big Companies”)
- Associate Membership: \$10,000/year (“Small/ SBIR Companies”)
- Center Membership Agreement available for review upon request (provides Non-exclusive royalty free license to center research developed technology for internal use to all members)
- Majority of center membership funds support student lead research projects

John Siggins, Associate Director

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