

ESF MO Forum

Science Foresight for Joint Strategy Development



Discovering SciVal Spotlight



17th January 2012

Valerie Thiel – SciVal Consultant – v.thiel@elsevier.com

S&T – Academics & Government, Elsevier

Agenda



- Introduction
- Brief methodology
- Discovering with Spotlight
- Future possibilities

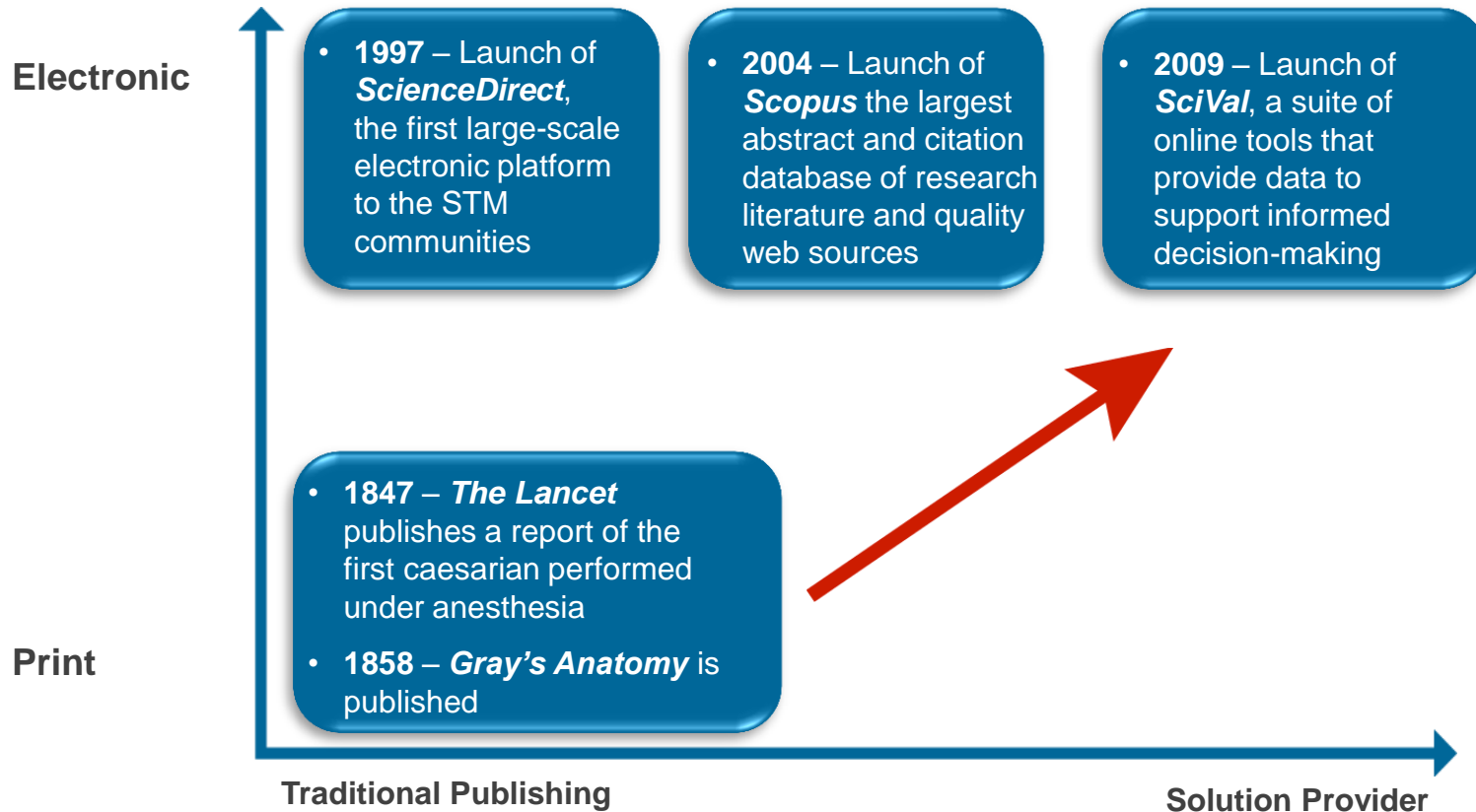
1994group>

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Scopus as underlying data source

The screenshot shows the Scopus search interface. At the top, there are logos for SciVerse and Scopus, and navigation links for Hub, ScienceDirect, and Scopus. Below this is a search bar with a dropdown menu set to 'Article Title, Abstract, Keywords'. A search button is visible. Underneath, there are filters for 'Limit to:' including 'Date Range (inclusive)' with options for 'Published' and 'Added to Scopus in the last 7 days', and 'Document Type' set to 'All'. There is also a 'Subject Areas' section with checkboxes for Life Sciences, Health Sciences, Physical Sciences, and Social Sciences & Humanities. A 'Search' button is at the bottom right of the filter section.

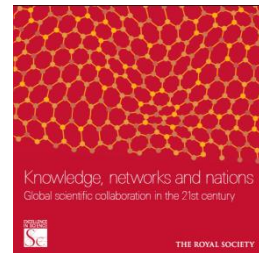
- Scopus is the world's largest multidisciplinary abstract and citation database with peer-reviewed research literature, quality web sources, patents and more.
- Scopus covers over 19,000 titles from more than 6,400 global publishers.
 - Health Sciences (+100% Medline): 6,900
 - Physical Sciences: 7,300
 - Life Sciences: 4,300
 - Social sciences: 5,600
- Scopus contains over 20 million researcher profiles with author and affiliation disambiguation, and affiliation identification for all institutions that a researcher is associated with.
- Scopus is used by many research institutions globally to analyse research outputs, e.g. OECD, ERC, Royal Society, ...



Korea Institute of
Science and Technology Information



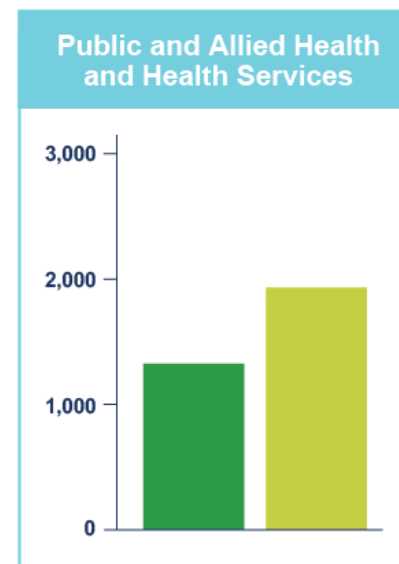
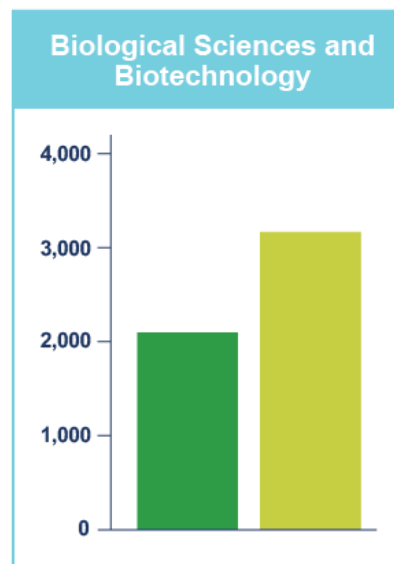
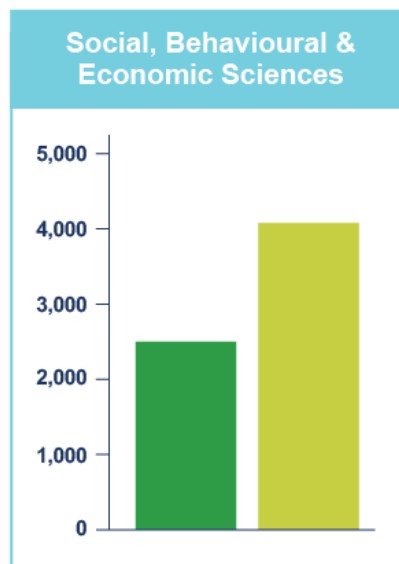
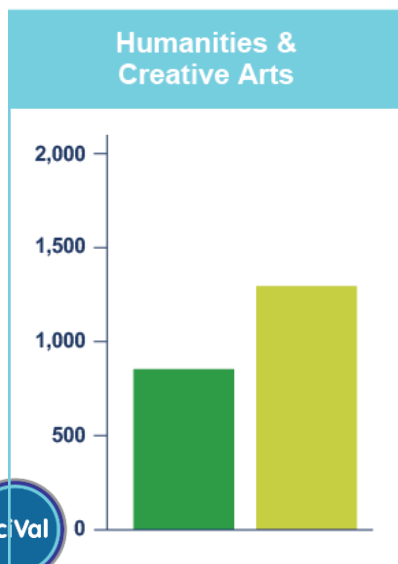
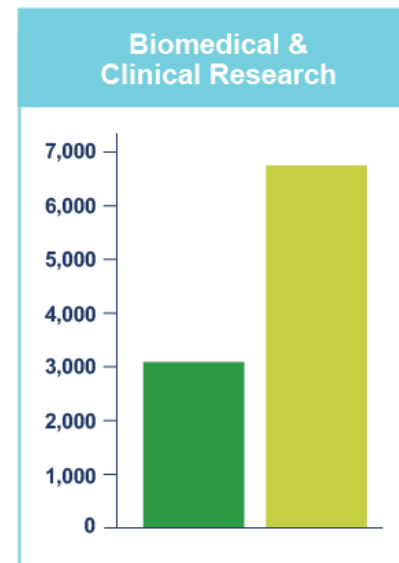
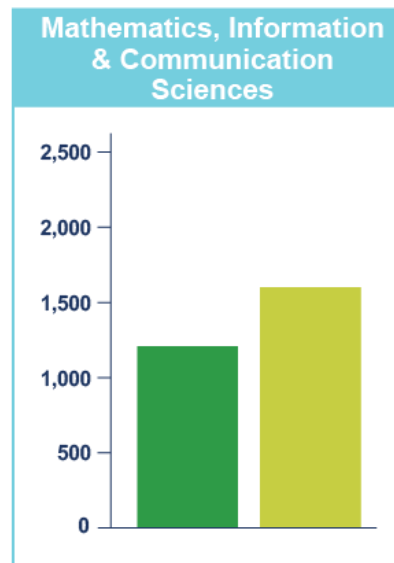
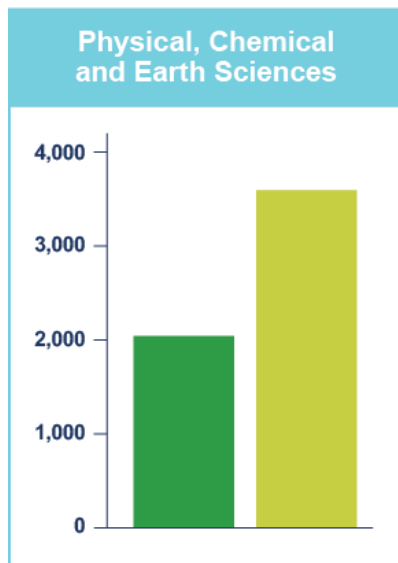
Institute for
Research Information
and Quality Assurance



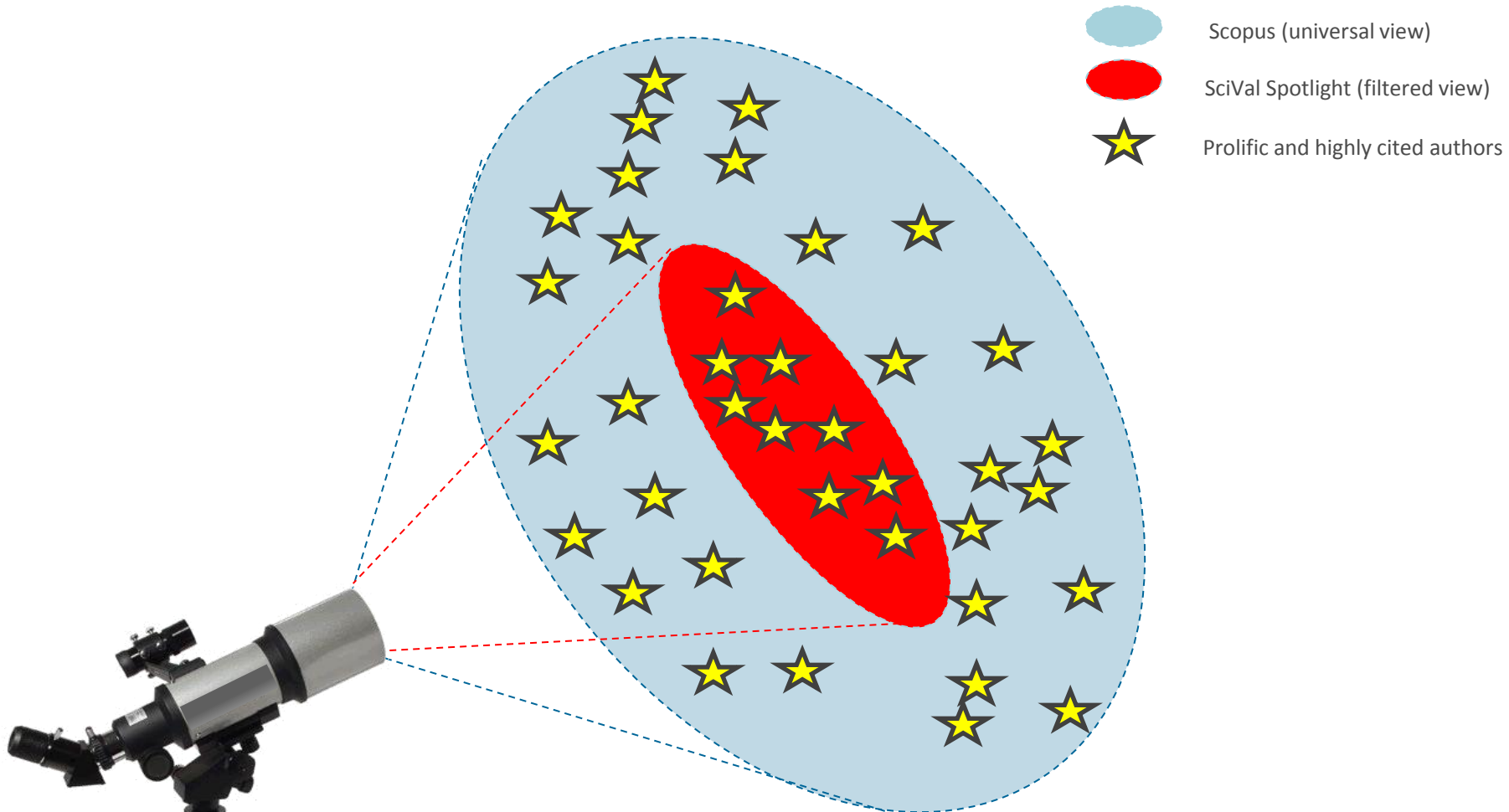
Scopus coverage per discipline

9,300 vs. 18,300 Titles (2010)

■ Nearest Competitor ■ Scopus

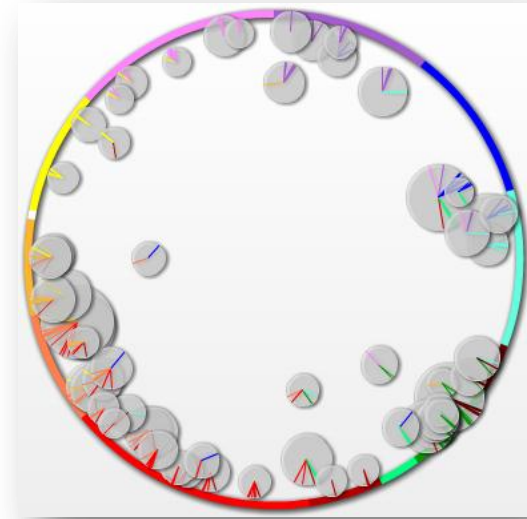
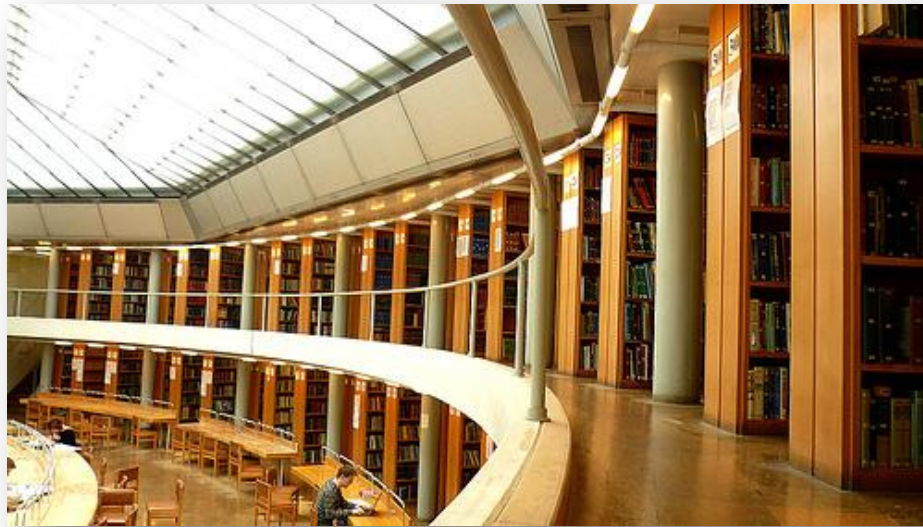


Data sources and tools: Scopus vs. Spotlight view



SciVal Spotlight, a customized web-based tool that enables institutions/governments to evaluate their research excellence and adjust their strategies, having all tactical elements available in one place to support implementation.

Integrating new ways to look at strengths: discovering multi-disciplinarity, leadership... input for strategy



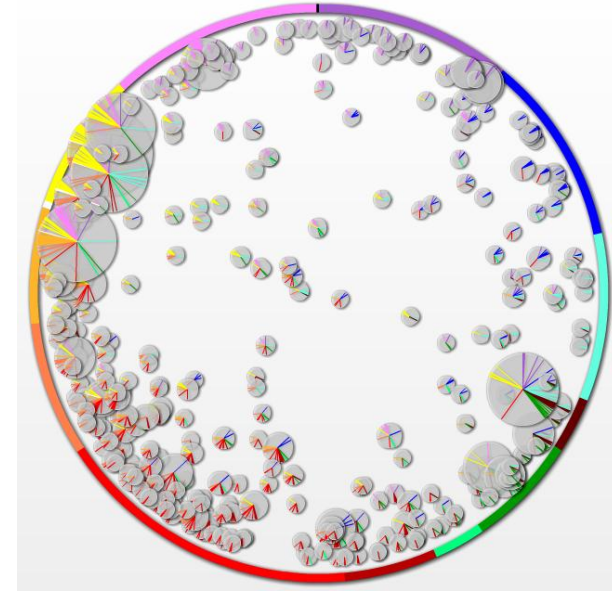
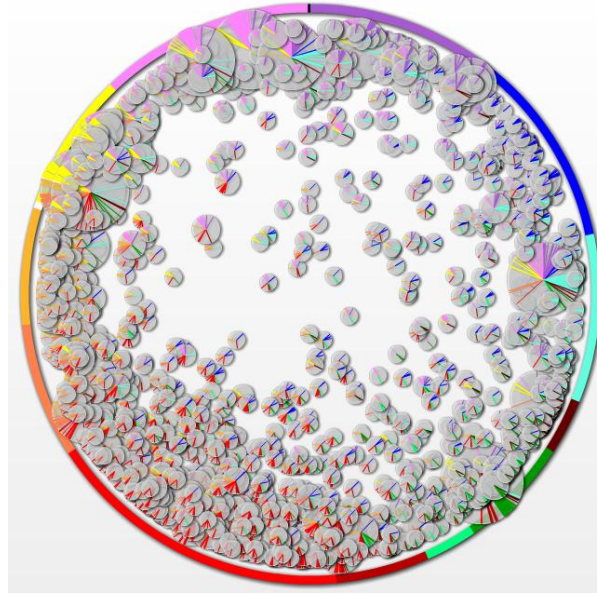
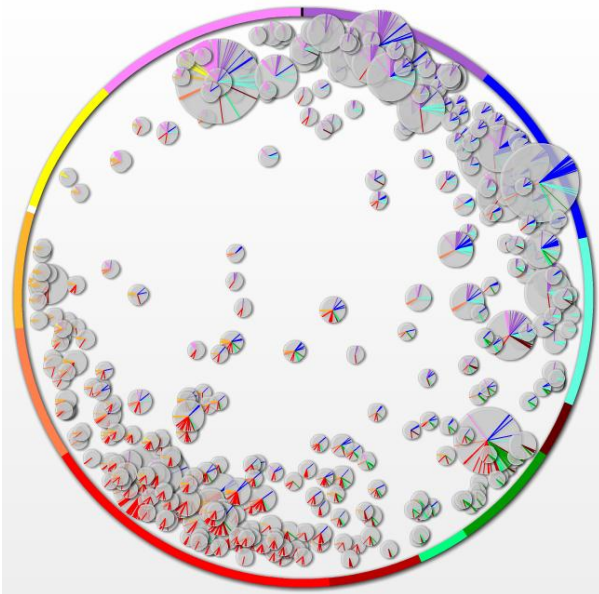
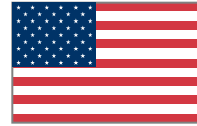
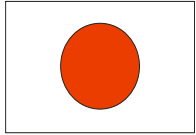
Sweden 2010

- 5 year slice of data (2006 - 2010)
- Article level classification (Co-Citation clustering by Small, 1973)
- Competency clustering (by Klavans & Boyack, 2008)
- Subject aggregation
- Identifying interdisciplinarity

3 leadership criteria:

- Relative Article Share (RAS) = output (production)
- Relative Reference Share (RRS) = citations (quality)
- State of the Art (SotA) = currency (innovation)

Each country has a different profile



Total 401 Competencies

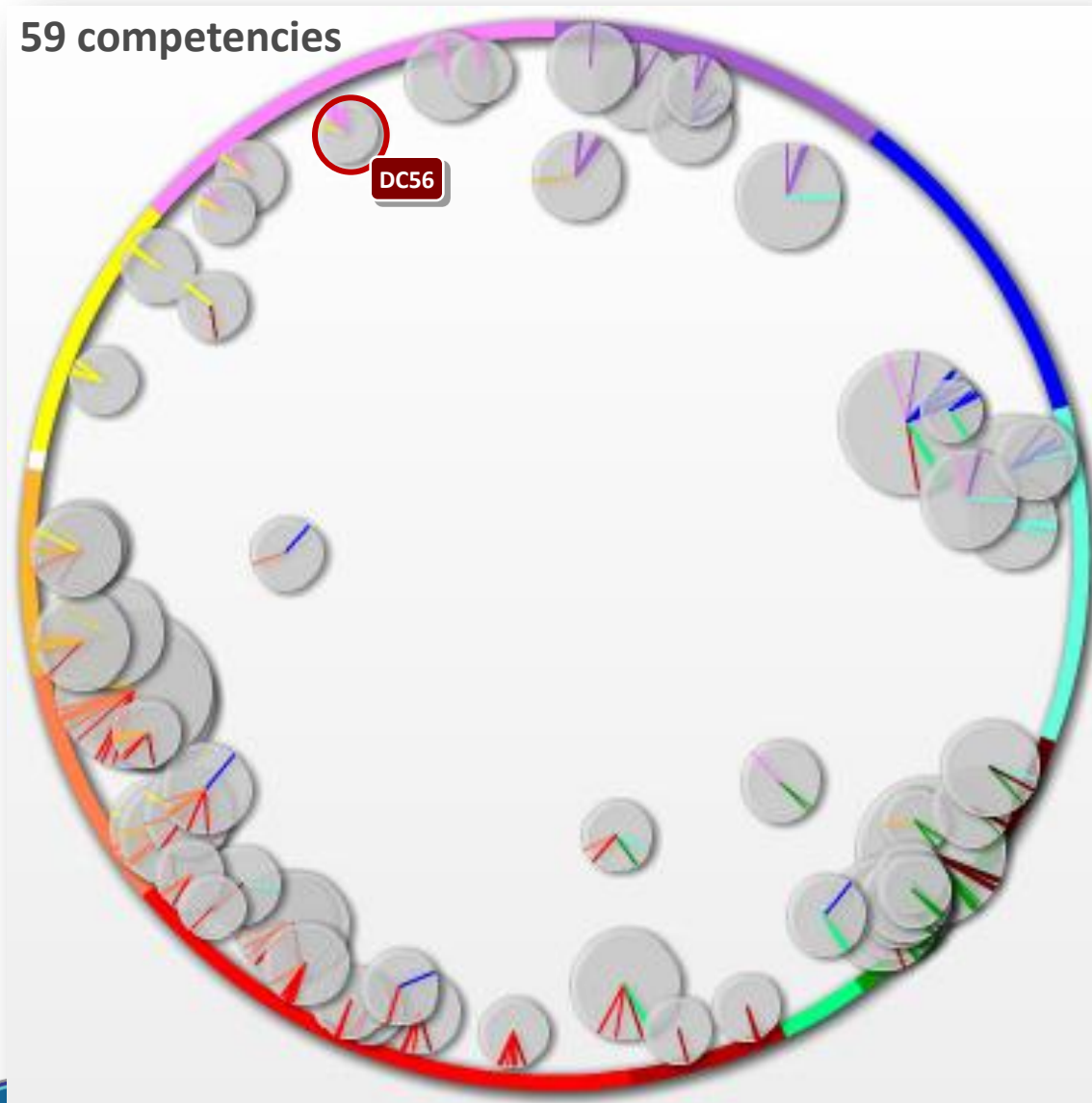
Total 1,707 Competencies

Total 398 Competencies

Looking at the country map of Sweden: study realised on the 2010 map



59 competencies



Each circle represents a competency of Sweden.

- The larger the circle, the more articles are in that competency.
- The location of each circle is determined by the primary subject area of that competency. Circles closer to the center are more interdisciplinary.

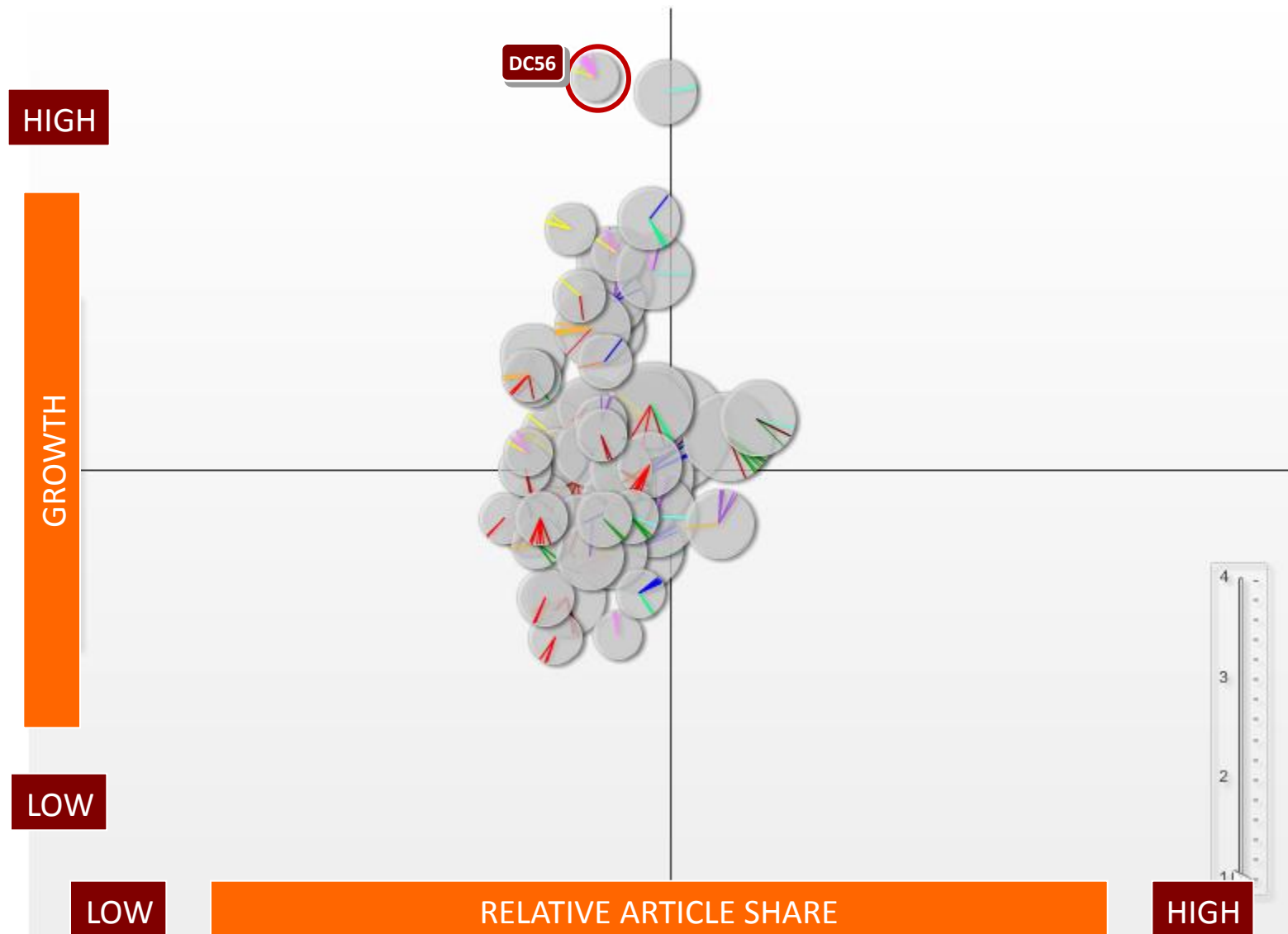
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Subject areas

Math & Physics	<input type="checkbox"/>
Chemistry	<input type="checkbox"/>
Engineering	<input type="checkbox"/>
Earth Sciences	<input type="checkbox"/>
Biology	<input type="checkbox"/>
Biotechnology	<input type="checkbox"/>
Infectious Diseases	<input type="checkbox"/>
Medical Specialities	<input type="checkbox"/>
Health Sciences	<input type="checkbox"/>
Brain Research	<input type="checkbox"/>
Humanities	<input type="checkbox"/>
Social Sciences	<input type="checkbox"/>
Computer Science	<input type="checkbox"/>
Other	<input type="checkbox"/>



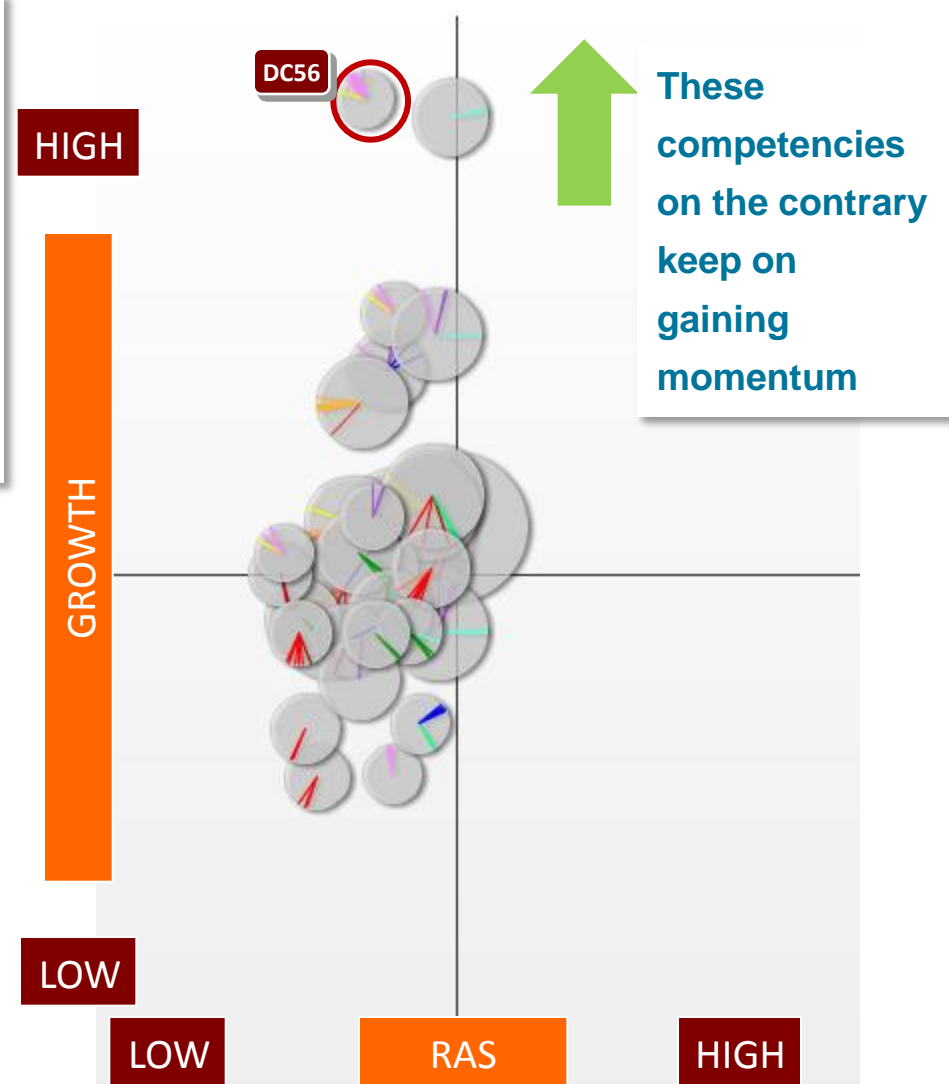
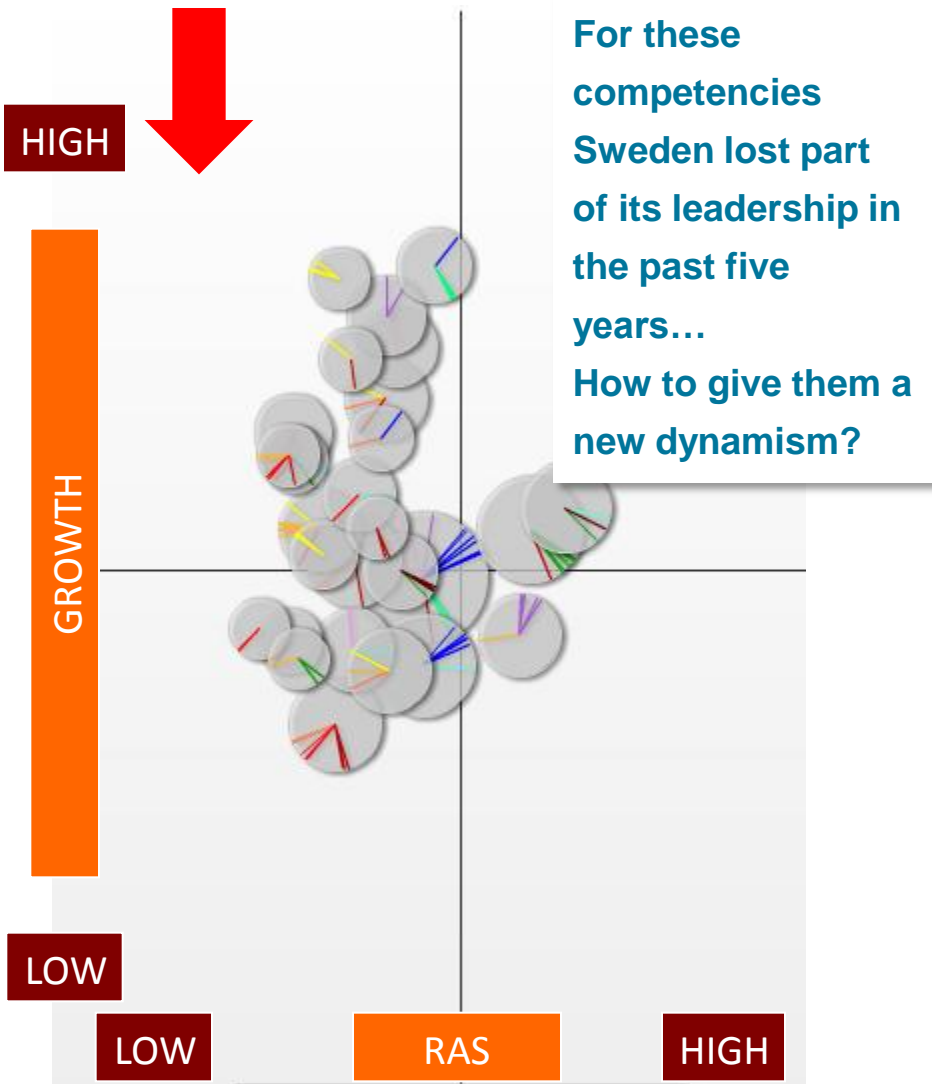
Sweden – Portfolio of strengths



Source: SciVal Spotlight 2010 map



Sweden – Portfolio of strengths, strategic analysis



Example of the fastest growing competency (DC56) – Enterprise architecture – Top Institutions



Distinctive Competency # 56

Main Keywords: enterprise architecture, life cycle, architecture EA

Competency	Authors in this country	Keywords	Disciplines	Articles published	
				worldwide	country
DC #56	Johnson P.; Lagerström R.; Franke U.	enterprise architecture; life cycle; architecture EA	Data Mining; Power Distribution; Systems Software	1,348 ▲	98 ▲

The table below lists some additional metrics for this competency, including fractionalized article counts

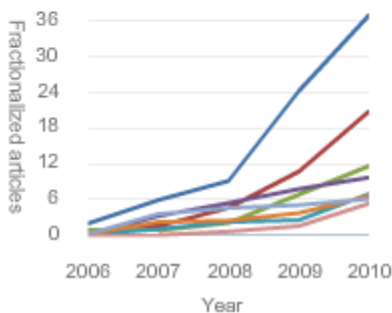
	Market Size (Global)	Article Share (Sweden)	RAS	RRS	SotA
Growth	523.5 28.14% ▲	53.5 4.6 ▲	10.2% 1.47% ▲	0.66 ▲	1.10 -32.64

Region Global ▼

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View top institutions:

- All institutions
- Sweden institutions



All institutions

Institution (Country)	Fractionalized articles	Total articles	RRS	SotA	Citation count
1. Royal Institute of Technology (SWE)	36.9	54	2.64	-48.97	82.6
2. Technische Universität München (DEU)	20.8	30	0.00	6.86	6.6
3. Universität St. Gallen (CHE)	11.6	23	0.38	6.35	12.8
4. Technical University of Denmark (DNK)	9.7	19	0.34	5.96	56.1
5. Utrecht University (NLD)	6.9	15	0.00	5.39	7.2
6. Universidad de Castilla-La Mancha (ESP)	6.6	15	0.21	4.70	5.9
7. Ecole des Mines de Paris (FRA)	6.1	9	0.21	4.97	47.5
8. Universidad Politécnica de Madrid (ESP)	5.3	11	0.14	4.73	5.1

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SciVal

Source: SciVal Spotlight (based on Scopus data)



DC56 – Enterprise architecture – Top authors & Collaborating authors



Distinctive Competency # 56

Main Keywords: enterprise architecture, life cycle, architecture EA

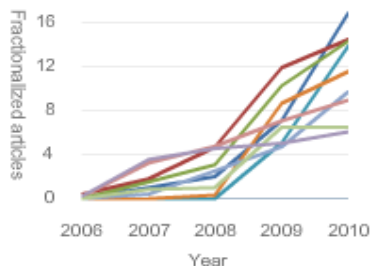
Region Global

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General Rank Lists Graphs

View top authors:

- All authors
- Sweden authors
- Authors from other countries
- Collaborating authors



All authors

The table below lists the top 10 authors contributing articles to this competency.

Name	Institution / Country	Fractionalized articles	Total articles	SotA	Citation count
1. Matthes F.	Technische Universitat... DEU	16.8	18	7.53	3.0
2. Johnson P.	Royal Institute of Tec... SWE	14.4	21	4.33	44.2
3. Lagerström R.	Royal Institute of Tec... SWE	14.3	20	5.09	29.6
4. Schweda C.M.	Technische Universitat... DEU	13.8	15	7.92	0.0
5. Buckl S.	Technische Universitat... DEU	13.8	15	7.92	0.0
6. Franke U.	Royal Institute of Tec... SWE	11.5	14	4.84	12.3
7. Kajko-Mattsson M.	Royal Institute of Tec... SWE	9.7	13	6.08	1.5
8. Pinson P.	Technical University o... DNK	8.9	15	5.88	48.0
9. Ullberg J.	Royal Institute of Tec... SWE	6.5	9	3.80	18.6
10. Kariniotakis G.N.	Ecc...				

Collaborating authors

The table below lists the top 10 contributing authors who are not from Sweden, but have co-authored at least one article in this competency with someone from Sweden.

Name	Institution / Country	Fractionalized articles	Total articles	SotA	Citation count
1. Aier S.	Universitat St. Gallen CHE	6.0	9	6.57	4.0
2. Saat J.	Universitat St. Gallen CHE	3.9	4	7.33	3.0
3. Winter R.	Universitat St. Gallen CHE	3.4	6	5.74	1.0
4. Holttinen H.	VTT FIN	1.8	3	3.82	11.5
5. O'Malley M.J.	University College Dub... IRL	1.2	2	7.80	0.0
6. van Sinderen M.J.	University of Twente NLD	1.1	4	6.32	3.3
7. Faed A.	Curtin University of T... AUS	1.1	2	2.76	0.0
8. Zima M.	ETH Zurich CHE	1.0	1	5.59	0.0

DC56 – Enterprise architecture – Top countries



Distinctive Competency # 56

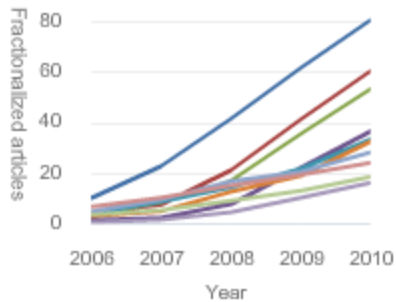
Main Keywords: enterprise architecture, life cycle, architecture EA

Region Global ▾

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General Rank Lists Graphs

View top countries:



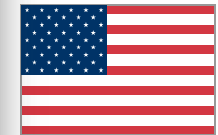
Countries

Country	Fractionalized articles	Total articles	RRS	SotA	Citation count
1. United States	80.8	225	0.91	0.25	117.5
2. Germany	60.7	138	0.15	5.51	46.9
3. Sweden	53.5	98	1.10	-32.64	92.7
4. China	36.8	80	0.00	4.89	0.3
5. Spain	33.5	74	0.58	4.94	50.9
6. Netherlands	32.9	83	0.73	5.39	41.7
7. United Kingdom	28.6	102	0.03	2.81	37.4
8. Canada	24.3	77	0.12	3.31	30.6
9. Australia	18.7	57	0.06	3.29	10.9
10. Switzerland	16.5	33	0.33	6.19	16.7

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[All Countries](#)



At country level, Sweden is in competition with the USA and Germany

Overview of the Swedish institutions and their contribution to the country strengths



Funding | Spotlight | Strata

Home | Explore competencies | **Publication overview** | Search

Overview | Countries | **Institutions**

country Sweden | **year 2010** | Change | Download as CSV | Print

Institution	Articles ▼	Growth	Competency articles	Collaboration			Citation count	CPA	SotA	Top 5 rate
				Overall	National	International				
Karolinska Institutet	21,901	2.83% ▲	9.61%	72.49%	33.50%	53.09%	187,729	8.57	0.70	25
Lund University	20,505	0.22% ▲	12.13%	65.53%	24.36%	52.00%	136,212	6.64	-0.03	42
Uppsala University	18,270	2.09% ▲	9.26%	70.83%	35.07%	51.43%	120,857	6.62	-0.19	38
Goteborg University	12,512	2.07% ▲	11.99%	66.64%	35.64%	45.21%	88,643	7.08	-0.22	31
Royal Institute of Technology	11,793	2.50% ▲	7.91%	62.14%	20.64%	50.79%	43,005	3.65	0.08	15
Stockholm University	8,640	5.66% ▲	11.68%	69.83%	30.36%	54.30%	58,739	6.80	-0.32	16
Linkoping University	8,318	3.69% ▲	10.30%	59.52%	32.09%	37.00%	36,736	4.42	0.24	19
Umea University	7,753	2.12% ▲	13.98%	68.23%	37.07%	46.03%	50,394	6.50	-0.08	24
Chalmers University of Technol...	7,553	0.69% ▲	6.56%	61.60%	23.81%	46.41%	26,946	3.57	0.40	12
Swedish University of Agricult...	5,572	3.52% ▲	13.59%	66.33%	29.94%	47.82%	27,264	4.89	-1.07	10
Orebro University	2,349	5.42% ▲	14.51%	71.47%	53.30%	34.96%	14,112	6.01	0.26	4
Lulea University of Technology	2,105	1.93% ▲	8.87%	54.13%	19.51%	40.08%	4,657	2.21	-0.55	5
AstraZeneca Sweden	1,667	-6.41% ▼	9.63%	86.65%	54.38%	54.63%	16,685	10.01	0.87	1
Karlstad University	1,197	5.04% ▲	9.45%	60.48%	38.34%	29.75%	3,801	3.18	-0.23	2
Mid Sweden University	983	-3.80% ▼	19.42%	55.59%	38.02%	26.21%	3,076	3.13	-0.54	4
Swedish Defence Research Agency	933	-6.40% ▼	2.20%	67.83%	49.46%	31.15%	2,737	2.93	0.78	1
Swedish Museum of Natural Hist...	872	2.45% ▲	27.59%	85.54%	30.71%	71.36%	5,539	6.35	-5.59	6
University of Kalmar	838	12.19% ▲	6.43%	76.29%	55.60%	47.05%	5,795	6.92	-0.34	2
Swedish Institute for Infectio...	834	3.62% ▲	3.16%	92.02%	70.67%	55.31%	5,985	7.18	1.19	0
Malmo University	751	-1.47% ▼	16.38%	67.49%	49.35%	33.55%	2,752	3.66	-0.96	3

View of another country: the map of France



country France | year 2010 | [Change](#)

Subject areas

<input type="checkbox"/> Math & Physics (95)	<input type="checkbox"/>
<input type="checkbox"/> Chemistry (81)	<input type="checkbox"/>
<input type="checkbox"/> Engineering (82)	<input type="checkbox"/>
<input type="checkbox"/> Earth Sciences (38)	<input type="checkbox"/>
<input type="checkbox"/> Biology (38)	<input type="checkbox"/>
<input type="checkbox"/> Biotechnology (33)	<input type="checkbox"/>
<input type="checkbox"/> Infectious Diseases (50)	<input type="checkbox"/>
<input type="checkbox"/> Medical Specialities (95)	<input type="checkbox"/>
<input type="checkbox"/> Health Sciences (41)	<input type="checkbox"/>
<input type="checkbox"/> Brain Research (38)	<input type="checkbox"/>
<input type="checkbox"/> Humanities (3)	<input type="checkbox"/>
<input type="checkbox"/> Social Sciences (22)	<input type="checkbox"/>
<input type="checkbox"/> Computer Science (84)	<input type="checkbox"/>
<input type="checkbox"/> Other (0)	<input type="checkbox"/>

Leadership of this country

<input type="checkbox"/> Publication leader (69)
<input type="checkbox"/> Citation leader (138)
<input type="checkbox"/> Innovation leader (124)

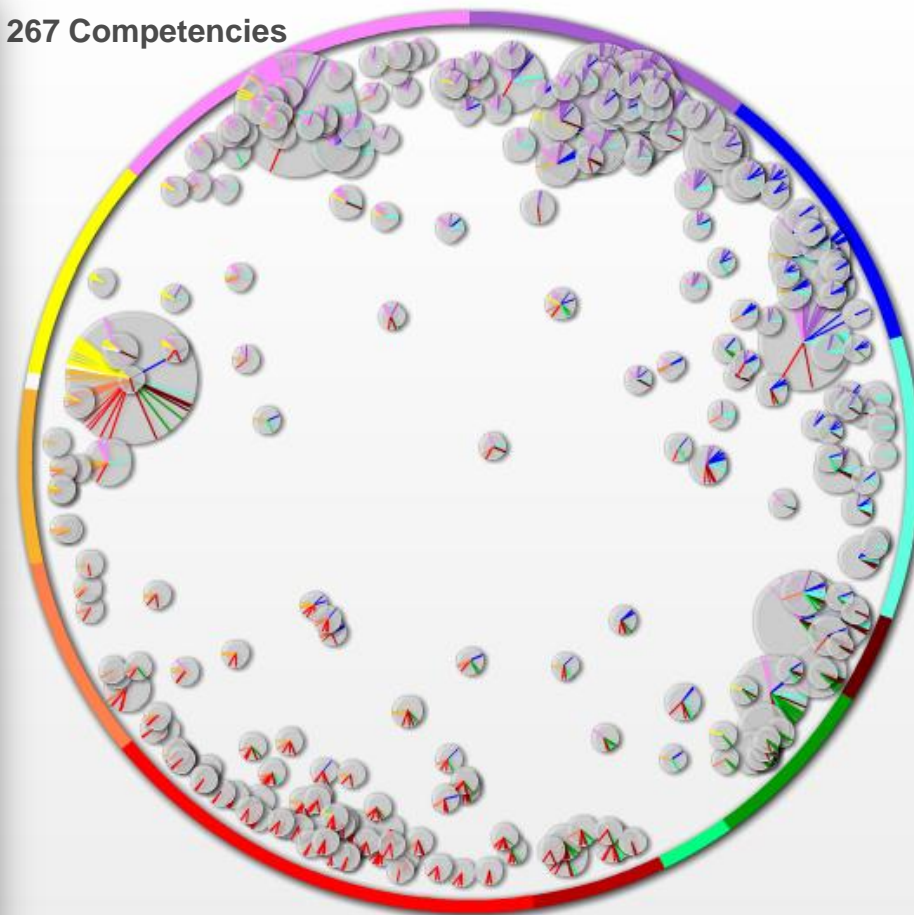
Article share of this country

<input type="checkbox"/> Growing share (146)
<input type="checkbox"/> Declining share (121)

Trend of field (worldwide)

<input type="checkbox"/> Growing field (223)
<input type="checkbox"/> Declining field (44)

267 Competencies



Each circle represents a competency of France.

- The larger the circle, the more articles are in that competency.
- The location of each circle is determined by the primary subject area of that competency. Circles closer to the center are more interdisciplinary.

[Learn more »](#)

Subject areas

<input checked="" type="checkbox"/> Math & Physics	<input type="checkbox"/>
<input checked="" type="checkbox"/> Chemistry	<input type="checkbox"/>
<input checked="" type="checkbox"/> Engineering	<input type="checkbox"/>
<input checked="" type="checkbox"/> Earth Sciences	<input type="checkbox"/>
<input checked="" type="checkbox"/> Biology	<input type="checkbox"/>
<input checked="" type="checkbox"/> Biotechnology	<input type="checkbox"/>
<input checked="" type="checkbox"/> Infectious Diseases	<input type="checkbox"/>
<input checked="" type="checkbox"/> Medical Specialities	<input type="checkbox"/>
<input checked="" type="checkbox"/> Health Sciences	<input type="checkbox"/>
<input checked="" type="checkbox"/> Brain Research	<input type="checkbox"/>
<input type="checkbox"/> Humanities	<input type="checkbox"/>
<input checked="" type="checkbox"/> Social Sciences	<input type="checkbox"/>
<input checked="" type="checkbox"/> Computer Science	<input type="checkbox"/>
<input checked="" type="checkbox"/> Other	<input type="checkbox"/>

Our host today: the map of INSERM



224 Competencies



Each circle represents a competency of INSERM.

- The larger the circle, the more articles are in that competency.
- The location of each circle is determined by the primary subject area of that competency. Circles closer to the center are more interdisciplinary.

[Learn more »](#)

Subject areas

Math & Physics	<input type="checkbox"/>
Chemistry	<input type="checkbox"/>
Engineering	<input type="checkbox"/>
Earth Sciences	<input type="checkbox"/>
Biology	<input type="checkbox"/>
Biotechnology	<input type="checkbox"/>
Infectious Diseases	<input type="checkbox"/>
Medical Specialities	<input type="checkbox"/>
Health Sciences	<input type="checkbox"/>
Brain Research	<input type="checkbox"/>
Humanities	<input type="checkbox"/>
Social Sciences	<input type="checkbox"/>
Computer Science	<input type="checkbox"/>
Other	<input type="checkbox"/>



Source: SciVal Spotlight 2010 (based on Scopus data)

Discovering the fastest growing competencies of INSERM



institution **INSERM** | year **2010** | [Change](#)

Subject areas

- Math & Physics (3)
- Chemistry (10)
- Engineering (1)
- Earth Sciences (0)
- Biology (5)
- Biotechnology (18)
- Infectious Diseases (70)
- Medical Specialities (178)
- Health Sciences (44)
- Brain Research (61)
- Humanities (1)
- Social Sciences (7)
- Computer Science (6)
- Other (0)

Leadership of this institution

- Publication leader (122)
- Citation leader (60)
- Innovation leader (145)

Article share of this institution

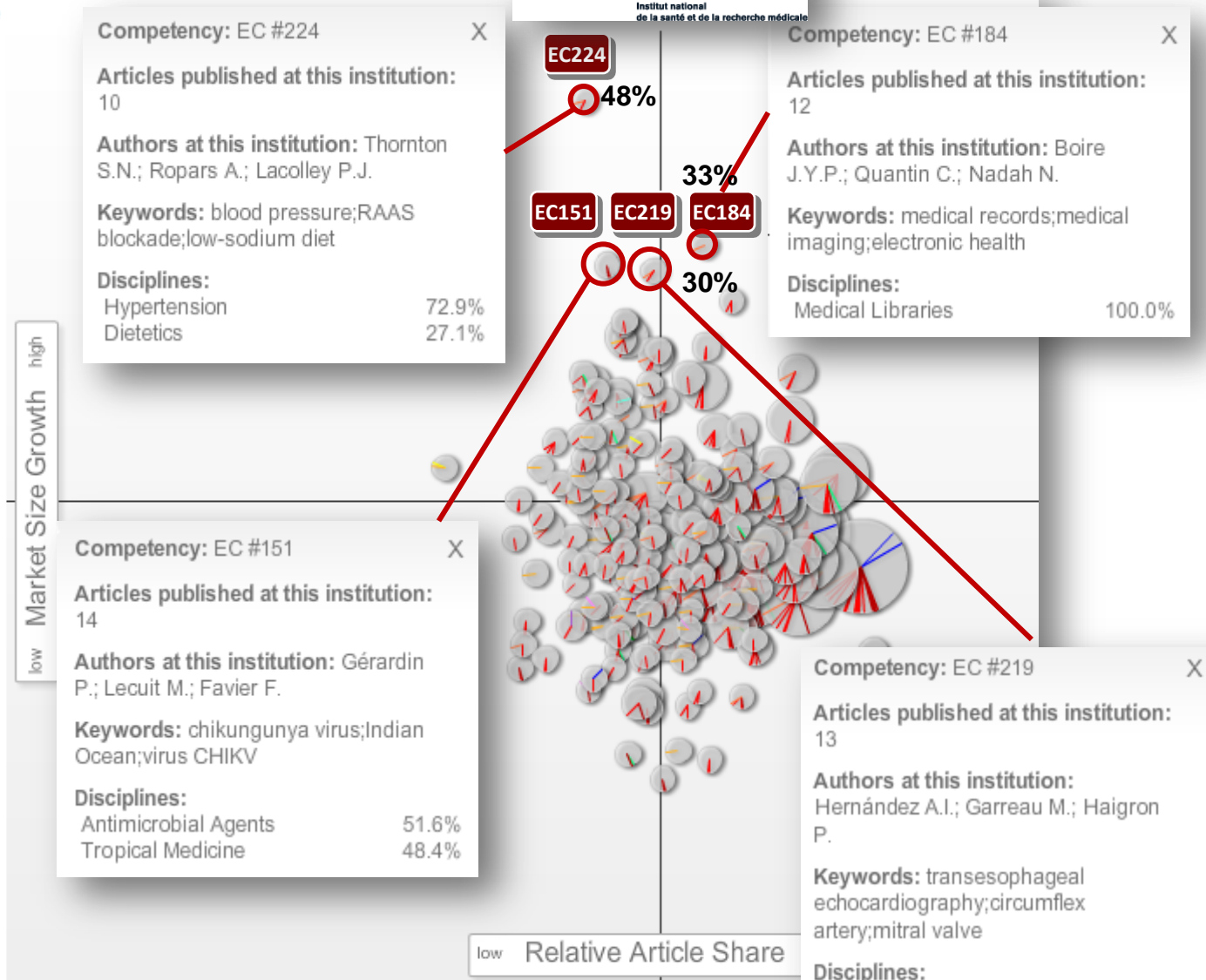
- Growing share (125)
- Declining share (99)

Size of field (worldwide)

- Relatively large field (40)
- Relatively small field (184)

Trend of field (worldwide)

- Growing field (142)
- Declining field (82)



Source: SciVal Spotlight (based on Scopus data)

Zooming on EC224, all detailed information is available, including journals and their indexes



Emerging Competency # 224

Main Keywords: blood pressure, RAAS blockade, low-sodium diet



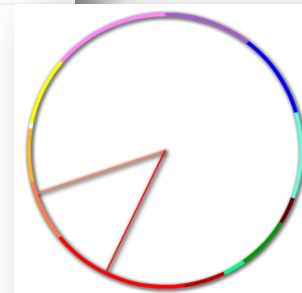
General

Rank Lists

Graphs

Print preview

Competency	Authors at this institution	Keywords	Disciplines	Articles published	
				worldwide	institution
EC #224	Thornton S.N.; Ropars A.; Lacolley P.J.	blood pressure; RAAS blockade; low-sodium diet	Hypertension; Dietetics	181 ▲	10 ▲



The table below lists some additional metrics for this competency, including fractionalized article counts

	Market Size (Global)	Article Share (INSERM)		RAS	RRS	SotA
Growth	55.1 48.28% ▲	7.7 1.29 ▲	14.0% 3.9% ▲	0.67 ▲	0.50	3.65

Journals

Name	(% of total)	SJR	SNIP
Hypertension Research	(6.7%)	0.248	1.093
Nephrology Dialysis Transplantation	(5.3%)	0.354	1.464
Journal of Hypertension	(4.5%)	0.432	2.041
Journal of the American Society of Nephrology : JASN	(4%)	1.139	3.126
Metabolism: Clinical and Experimental	(3.4%)	0.284	1.083

[View all](#)



Future possibilities: we keep on exploring with you...



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Category Dashboard
Heart Failure and Cardiomyopathy

Category Definition

VA | NIH | Other Funders | Performed by VA Researchers

Portfolio Category Indicator
32 Grants
102 Citations
42M Funded

Fingerprint
Parasitemia
Falciparum Malaria
Psoriasis
Neuroblastoma
Malaria
Antimalarials
Plasmodium falciparum
Sesquiterpenes
Melioidosis
Prospective Studies

Grants Timeline
Award Amount in \$ (green line), Number of awarded projects (blue area)

Publications Timeline
Times Cited (green line), Publications of PIs (blue area)

Similar Portfolio Categories
Based on: Concepts Overlap

Cardiology and Brain Failure
97% Concept Overlap
56 Grants
157 Citations
58M Funded

Vascular Atherosclerotic
93% Concept Overlap
40 Grants
80 Citations
37M Funded

Abdominal Aortic Aneurysm
81% Concept Overlap
24 Grants
78 Citations
51M Funded

1543 Publ. generated
34 H-Index (PIs avg)
36 Times Cited (PIs avg)

Related Documents

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
Awarded Projects	129	149	106	152	163	167	174	146	146	141
Newly Awarded Projects	17	22	28	21	21	26	24	22	34	32
Awarded Projects in \$	66	87	97	95	106	114	112	106	100	98
Publications of PIs	2K	2K	2.3K	2.6K	2.8K	3K	3.1K	3.1K	2.8K	2.8K
Times cited of Publications of PIs	3K	3K	3K	3.4K	3.8K	4K	4.5K	4.7K	5.2K	5.1K

TOP 5 funded Organizations

Future possibilities: more information available...



TOP 5 funded Organizations

First Line: Number of Projects Second Line: Funded Amount

	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011
San Francisco Medical Center	3 \$ 9M	5 \$ 172K	17 \$ 12M	12 \$ 12M	12 \$ 12M	12 \$ 12M	12 \$ 12M	12 \$ 12M	5 \$ 172K	17
Boston Medical Center	5	12	3	3	12	5	12	17	12	3
West Los Angeles Medical Center										
Seattle Medical Center										
Pittsburgh Medical Center										

Researchers

H-index (Awarded Projects's P
Times Cited (Awarded Projects

- Arai, Andrew E
- Balaban, Robert S
- Levy, Daniel
- Manolio, Teri A
- Lakatta, Edward G

43 Grants

Most cited articles influenced by grants

We are also providing NIH, the Wellcome Trust and other funding organizations with portfolio planning and analysis tools
Now we are developing a module which allows these customers also to direct their tools:

→ To Scopus data to detect trends by being able to define the areas in which they are interested in themselves (different to Spotlight)

→ Against a database of awarded grants from more than 3000 funding organizations to see what the trends in funding research are

We will be launching this new solution later this year and can present it in detail at your request

1. Kim Kyung-Ah
Role of Fanconi Anemal Core Complex in the Incision of DNA Interstrand Crosslinks
1 December 2010 - 30 November 2015
U.S. Department of Veterans Affairs
Total Funding: \$ 359,036
Show Abstract New Category Based on this Article Similar Projects

2. Kim Kyung-Ah
Role of Fanconi Anemal Core Complex in the Incision of DNA Interstrand Crosslinks



Thank you!

