

Multi-dimensional research assessment and SciVal; a very brief overview



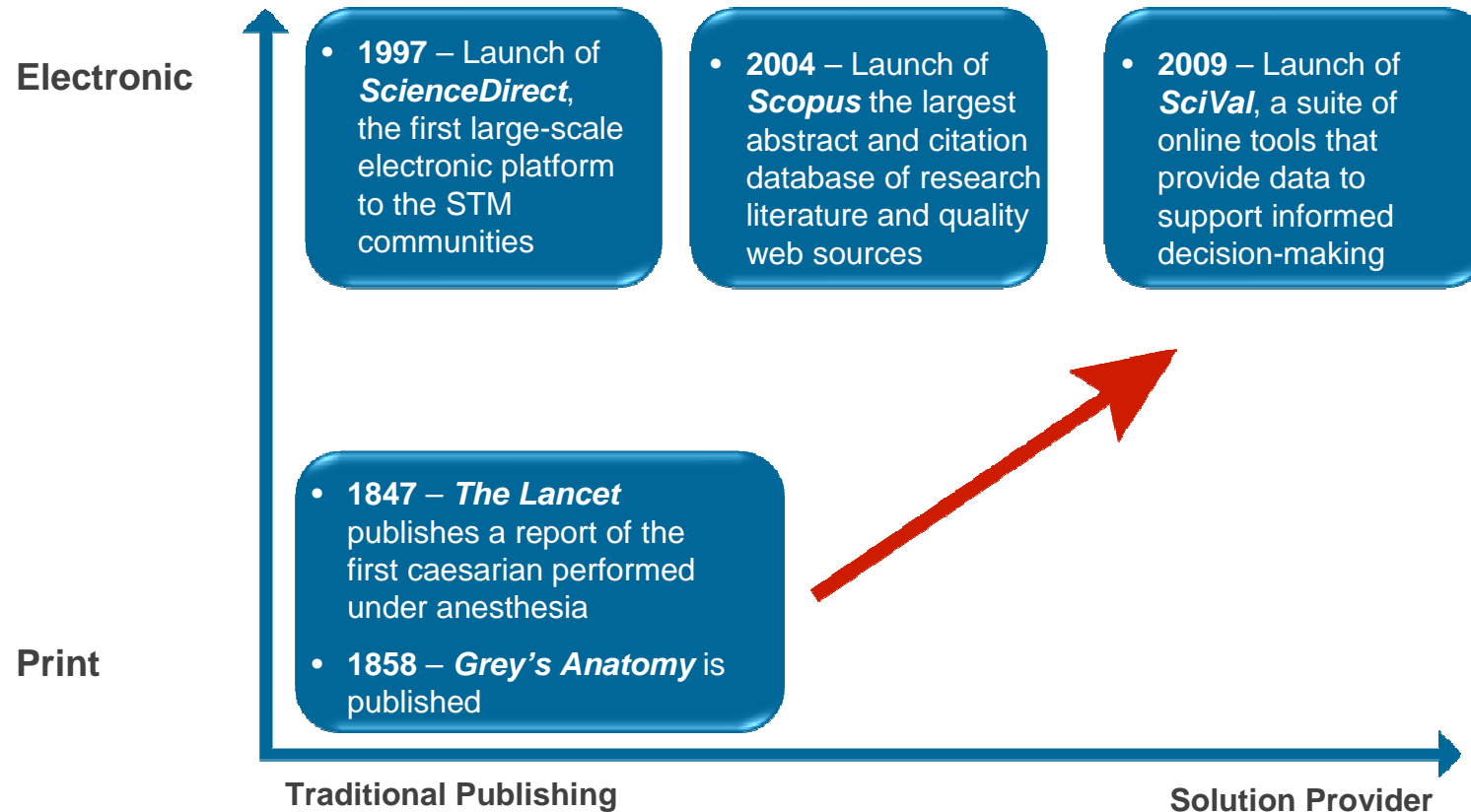
International Conference KRE-11
Prague, 9 September 2011
J.M. Verheggen, Elsevier

Agenda for today's discussion



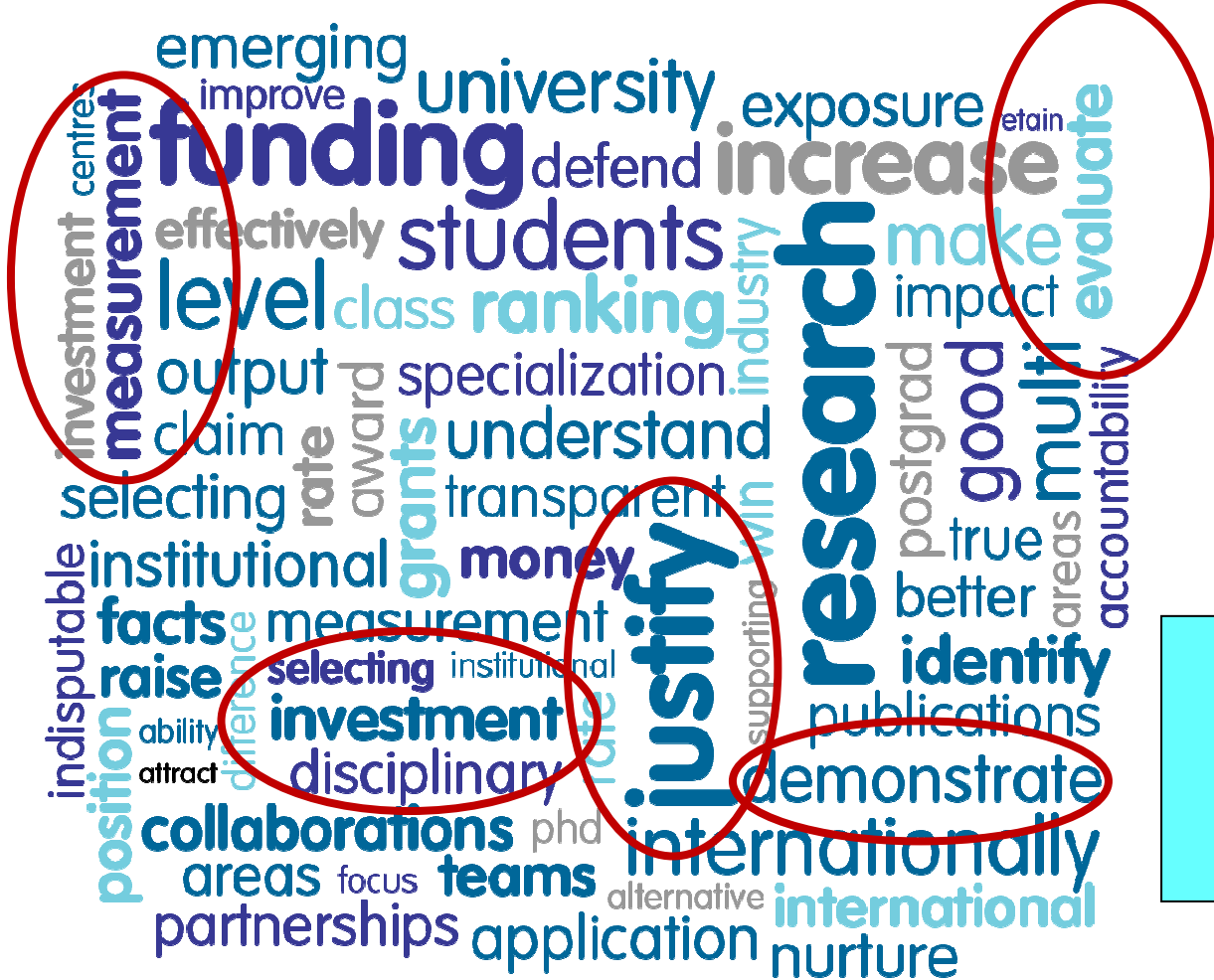
- Introduction
- Short reference to the multi-dimensional assessment matrix
- Elsevier's solutions mapped
- Examples

Elsevier has been working closely with the research community for over 125 years



Elsevier is a pioneer in the development of electronic tools that demonstrably improve the productivity and decision-making of our science and healthcare customers

What do we hear around the globe?



Research Assessment

- ✓ “an attempt to measure the return on investment in scientific-scholarly research”
- ✓ evaluation of research quality and measurements of research inputs, outputs and impacts
- ✓ embraces both qualitative and quantitative methodologies

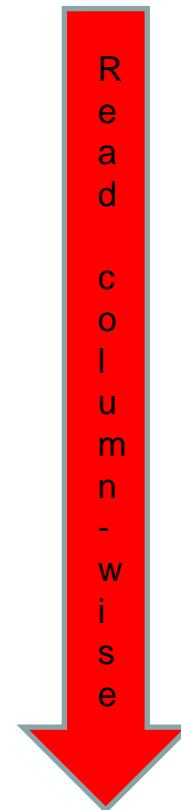
The future of research assessment exercises lies in the intelligent combination of metrics and peer review



Multi-dimensional Research Assessment Matrix (Part 1)



Unit of assessment	Purpose	Output dimensions	Bibliometric indicators	Other indicators
Individual	Allocate resources	Research productivity	Publications	Peer review
Research group	Improve performance	Quality, scholarly impact	Journal citation impact	Patents, licences, spin offs
Department	Increase multi-discipl. research	Innovation and social benefit	Actual citation impact	Invitations for conferences
Institution	Increase regional engagement	Sustainability & Scale	Internat. co-authorship	External research income
Research field	Promotion, hiring	Research infrastruct.	citation 'prestige'	PhD completion rates



Taken from: "Assessing Europe's University-based Research, Expert group on Assessment of University based Research, 2010, adjusted by H. Moed

Multi-dimensional Research Assessment Matrix (Part 1)



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important to upfront determine who, why, and what to assess



MDRAM - examples



- Individual
- Hiring/promotion
- Productivity & impact



- Publications in international journals;
- Actual citation impact



- PhD date, place, supervisor;
- Invitations for conferences

- Institution
- Increase multi-discipl. Research
- Productivity & impact



- % Papers in multi-disciplinary fields;
- Co-authorships from different discipl

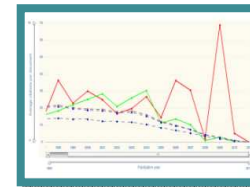


- Inter-discipl. teaching programs;
- Funding from multi-disc. res. programs

Positioning SciVal products



Unit of assessment	Purpose	Aspect	SciVal Product
Research group	Improve performance; Allocate resources	Productivity/ impact	Strata
Department; institution	Improve performance; Allocate resources;	Research infrastructure and potential	Experts Funding
Institution	Stimulate multi- disciplinary research; Improve performance;	Social benefits; sustainability; Prod./impact	Spotlight
Group, Dept, Institution	Improve performance & regional engagemt; Allocate resources;	Productivity/ impact; social impact; infrastr.	Custom Analytics



- ✓ Evaluate research groups
- ✓ Assess retention risks
- ✓ Assess collaborations



- ✓ Identify specific expertise
- ✓ Enable collaboration
- ✓ Match with funding opports



- ✓ assess research strengths
- ✓ collaboration potential
- ✓ determine what to fund
- ✓ compare to other institutes



- ✓ Trends analyses
- ✓ Benchmarking

SciVerse® Scopus – underlying data source for SciVal



- The largest abstract and citation database of research information
- **18,000+** active titles from more than **5,000** international publishers including coverage of:
 - Life Sciences
 - Health Sciences
 - Physical Sciences
 - Social Sciences
 - Arts and Humanities
- Independent journal metrics
 - **SNIP**: The Source-Normalized Impact per Paper corrects for differences in the frequency of citation across research fields
 - **SJR**: The SCImago Journal Bank reflects prestige of source – value of weighted citations per document

Assess research-strength at country level

in this specific example, multi-disciplinary research strength



country Czech Republic | year 2010 | [Change](#) | [Download as CSV](#) | [Print](#)

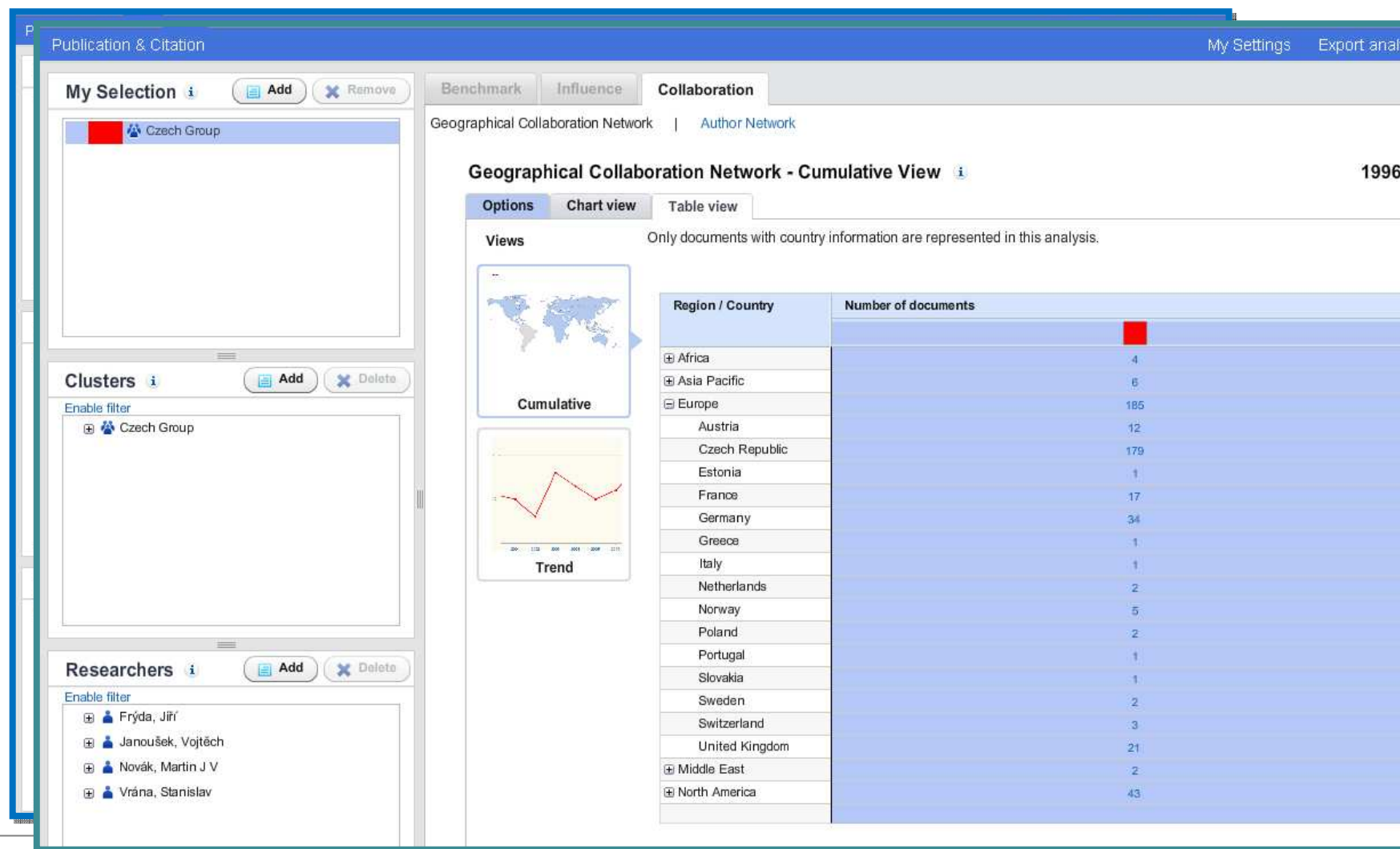
Institution	Competency	Authors in this country	Keywords	Disciplines	Articles published		Top 5 rate
					worldwide	country	
Czech Academy of Sciences Charles University	DC #1	Belohlavek R.; Vychodil V.; Perfilieva I.G.	residuated lattices; fuzzy logic; fuzzy logics	Logic; Fuzzy Sets; Data Mining	2,198 ▲	322 ▼	11 12
Masaryk University Czech Technical University Brno University of Technology Palacky University Institute of Chemical Technology	DC #2	Kizek R.; Adam V.; Barek J.	differential pulse; pulse voltammetry; GmbH &	Electro Analytical Chemistry; Electrochemical Development; Food Chemistry	2,803 ▲	334 ▲	
University of South Bohemia Mendel University of Agriculture University of Pardubice Technical University of Czech Republic	EC #3	Ullschmied J.; Rohlens K.; Krousky E.	laser beam; laser pulse; soft x-ray	Plasma Physics; Nuclear Instrumentation; Surface Coating Technology	1,836 ▲	213 ▼	
University of West Bohemia Czech University of Life Sciences University of Veterinary and Animal Sciences	DC #4	Chytrý M.; Pyšek P.; Hájek M.	plant species; Czech Republic; species composition	Plant Ecology; Mycology; Ecology	2,358 ▲	230 ▼	
Institute for Clinical and Molecular Biology Tomas Bata University Motal University Hospital	DC #5	Plomerová J.; Kvaček Z.; Hrouda F.	mantle lithosphere; ASCR w; Bohemian massif	Mineralogy; Seismology; Paleogeography	1,886 ▲	293 ▲	
Czech National Institute Technical University of Czech Republic Research Institute of Czech Academy of Sciences	DC #6	Nešetřil J.; Král' D.; Král' D.	constraint satisfaction; planar graphs; maximum degree	Discrete Applied Mathematics; Data Mining; Computer Modeling and Animation	1,307 ▲	144 ▼	
University of Ostrava Veterinary Research Institute Czech Geological Survey Institute of Hematology and Oncology Institute of Postgraduate Education	DC #7	Makrlík E.; Vaňura P.; Dybal J.	nitrobenzene saturated; stability constants; Akadémiai Kiadó	Organic Chemistry; Radiation Protection; Chromatography; Electrophoresis	1,588 ▼	184 ▲	

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Taken from the SciVal Spotlight country map for Czech Republic

Assess research groups on different criteria and specific reference fields



Assess specific expertise



JOHNS HOPKINS UNIVERSITY researchprofiles

Home > Peter Abadir

By Concept | By Last Name | By Full Text

Peter Abadir

Home

- Expert Overview
- Profile
- Publications
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- Trends
- Coauthor Network
- Research Network

Profile more >

- Angiotensin Type 2 Receptor
- Tetrazoles
- Valine
- Angiotensin Type 1 Receptor
- Angiotensin II Type 2 Recept...
- Angiotensin II
- Bradykinin B2 Receptors
- Imidazoles
- Pyridines
- Receptors, Angiotensin

Trends

Explore the Research Trends

Publications more >

- 2008 Abdel-Rahman Emaad M; Abadir Peter M; Siragy Helmy M
Regulation of renal 12(S)-hydroxyeicosatetraenoic acid in diabetes by angiotensin AT1 and AT2 receptors.
American journal of physiology. Regulatory, integrative and comparative physiology 2008;295(5):R1473-8.
- 2006 Abadir Peter M; Periasamy Ammasi; Carey Robert M; Siragy Helmy M
Angiotensin II type 2 receptor-bradykinin B2 receptor functional heterodimerization.
Hypertension 2006;48(2):316-22.
- 2005 Siragy Helmy M; Xue Chun; Abadir Peter; Carey Robert M
Angiotensin subtype-2 receptors inhibit renin biosynthesis and angiotensin II formation.
Hypertension 2005;45(1):122-7.

Similar Experts more >

Expert	Publications
Hunter Champion	216
Trinity Bivalacqua	134
Zsolt Szabo	59
William Mathews	45
Robert Dannals	230

Journals more >

Journal	Publications
Hypertension	3
American journal of ...	1
Endocrinology	1

Peter Abadir

Access accurate, comprehensive author profiles of researchers, including publication lists, **Grant, patent and CV data** integrated to provide a more comprehensive picture of an institution's research expertise.



Note: SciVal Experts is customized for the institution. Sample screens from other organizations provided. Source: SciVal Experts (April 2011), University of Michigan, Johns Hopkins University

Some examples of Collaborations with Government organisations



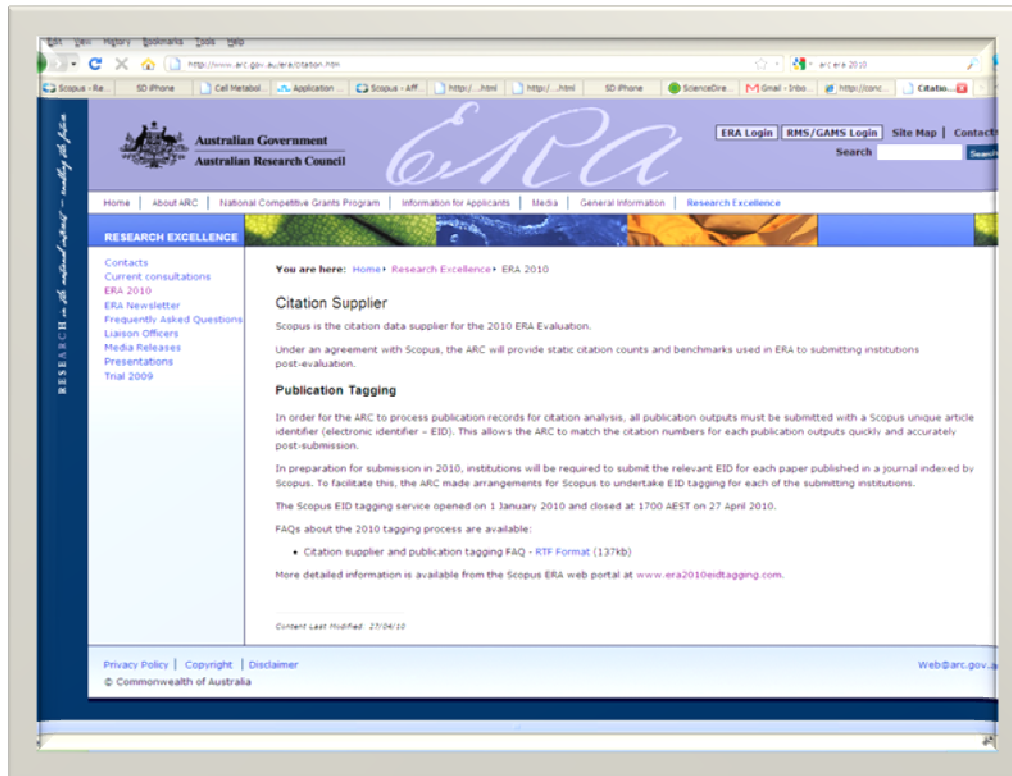
- To provide support to the research evaluation exercise process: ARC (Australia),



- Provide comprehensive analyses for BIS, Research Ministry UK



For ERA 2010, 2014, providing data and support services for national research evaluations



Assessment of research quality within Australia's higher education institutions using a combination of indicators and expert review by committees comprising experienced, internationally-recognized experts.

ERA uses leading researchers to evaluate research in eight discipline clusters.

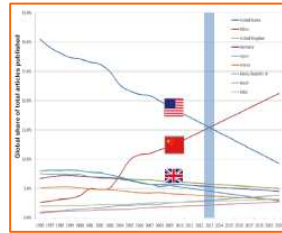
ERA will detail areas within institutions and disciplines that are internationally competitive, as well as point to emerging areas where there are opportunities for development and further investment.

Supported by Scopus Custom data and Analytical Services to manage the assessment process

For BIS, using a set of tools to provide a full picture of the international comparative performance of the UK

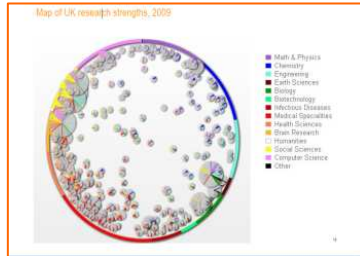
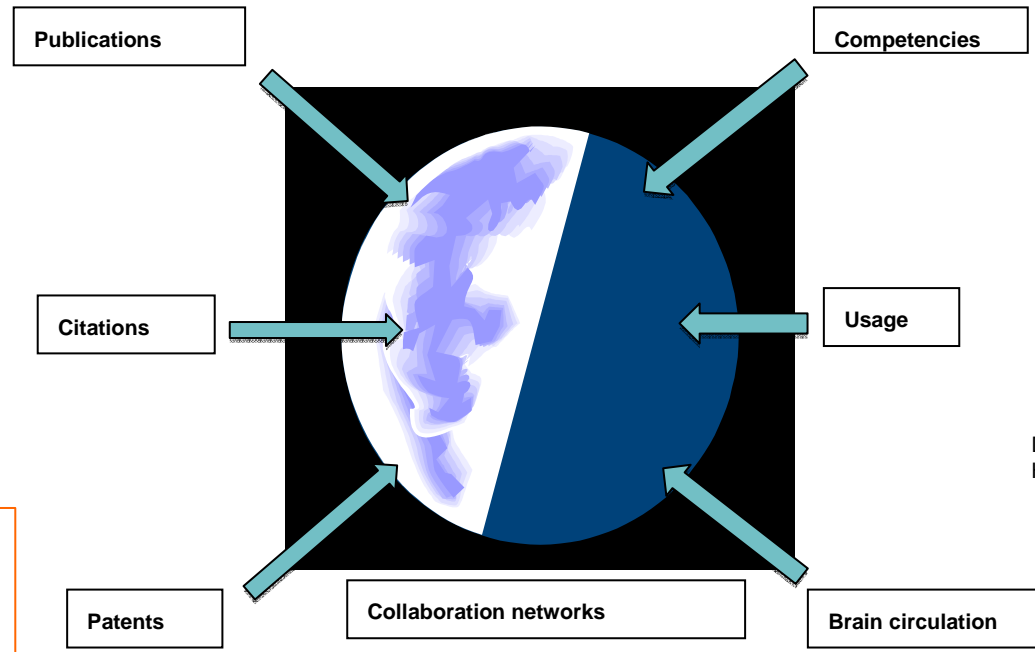


Standard tools + New tools

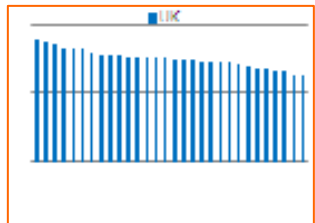


rank	country	publications	share	ranked top 1%	country	publications	share	ranked top 1%
1	United States	1,260,703,020	1.52	1,000	Germany	1,000,000,000	1.20	1,000
2	China	176,740,000,000	0.21	100	France	100,000,000	0.12	100
3	Japan	160,000,000,000	0.19	100	UK	100,000,000	0.12	100
4	South Korea	150,000,000,000	0.18	100	Italy	100,000,000	0.12	100
5	Germany	140,000,000,000	0.17	100	Spain	100,000,000	0.12	100
6	France	130,000,000,000	0.16	100	Sweden	100,000,000	0.12	100
7	UK	120,000,000,000	0.15	100	Canada	100,000,000	0.12	100
8	Italy	110,000,000,000	0.14	100	Australia	100,000,000	0.12	100
9	Spain	100,000,000,000	0.12	100	Netherlands	100,000,000	0.12	100
10	Sweden	100,000,000,000	0.12	100	China	100,000,000	0.12	100
11	Canada	100,000,000,000	0.12	100	India	100,000,000	0.12	100
12	Australia	100,000,000,000	0.12	100	Israel	100,000,000	0.12	100
13	Netherlands	100,000,000,000	0.12	100	South Korea	100,000,000	0.12	100
14	China	100,000,000,000	0.12	100	Japan	100,000,000	0.12	100
15	India	100,000,000,000	0.12	100	France	100,000,000	0.12	100
16	Israel	100,000,000,000	0.12	100	UK	100,000,000	0.12	100
17	South Korea	100,000,000,000	0.12	100	Germany	100,000,000	0.12	100
18	Japan	100,000,000,000	0.12	100	France	100,000,000	0.12	100
19	France	100,000,000,000	0.12	100	UK	100,000,000	0.12	100
20	UK	100,000,000,000	0.12	100	Germany	100,000,000	0.12	100

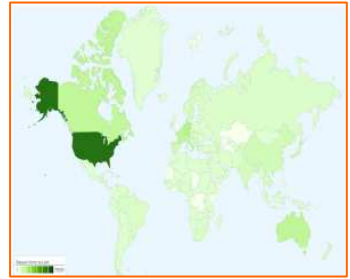
rank	country	value
1	United States	89,167
2	Japan	40,671
3	South Korea	10,485
4	Germany	10,060
5	Belgium	7,544
6	France	3,876
7	Canada	2,700
8	Switzerland	2,392
9	United Kingdom	2,385
10	Netherlands	2,310
11	China	1,569
12	Sweden	1,571
13	Australia	1,341
14	Italy	1,339
15	Finland	1,162
16	Israel	948
17	Canada	421



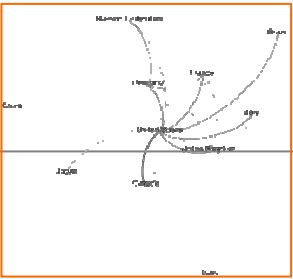
Interdisciplinary, new areas



Different perspective; Social Sciences & Humanities more visible



Researcher mobility and attraction



Take away points



- ✓ **The future of research assessment exercises lies in the intelligent combination of metrics and peer review**
- ✓ **Which metrics to use depends on the specific purpose of the evaluation, assessment, or analyses being considered**
- ✓ **Information providers are increasingly considered to be valuable partners that can contribute essential data, services and (customised) solutions**
- ✓ **We at Elsevier are keen to collaborate with academic institutions, funding agencies, and governments around the world to provide insights that meaningful contribute to high-quality research assessment , - evaluation, and - planning exercises.**



Thank you

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- Institutional and field delimitations
- Case studies

Top down versus bottom up approaches: institution and subject field “delimitation”

TOP DOWN

Select an institution's papers using author affiliations (incl. verification)



Categorize articles into research fields



Calculate indicators



Compare with benchmarks

BOTTOM UP

Compile a list of researchers



Compile a list of publications per researcher (incl. verification)



Aggregate researchers into groups, departments, fields, etc.



Calculate indicators; compare with benchmarks

Same approach for subject fields: predefine subject field versus co-citation

Positioning SciVal products



Institutional delimitation	Semantic/field delimitation	SCIVAL product or service
Top-down	Top-down	Custom Analytics
Top-down	Bottom-up	Spotlight
Bottom-up	Top-down	Strata
Bottom-up	Bottom-up	Custom Analytics; Research Profiler

Making investment choices

A case study: Tohoku University (Japan)



Solution and Methodology:

Traditionally, these decisions were made based only on peer review. Top researchers from each department would get together and make decisions based on their impressions of the applications and their knowledge of the candidates.

EVF Kitamura and his team decided they should take a different approach. They chose to include insight from data analysis in their decision making process. In addition to the results from peer review, peer review, as a qualitative analysis, was still needed to help evaluate the innovative nature of the topic and identify subject areas that may merit further support for an education society on publication data. For this reason, EVF Kitamura and his team believed that the combination of data and peer review was necessary to conduct a comprehensive and transparent evaluation.

SciVal Spotlight and SciVerse Scopus were among the data sets used to evaluate the research performance of the applicants.

Using SciVal Spotlight to see how groups are contributing to research strengths:

Step 1: Get a list of members included in each application. Incorporate not only the head of the group, but all members included in the project. (DOI - at Tohoku University)

Step 2: Search each name in SciVal Spotlight. Check if their research activities (publications) are related to the research competencies at Tohoku University.

Step 3: Add up the total competencies for each research project. If the total number is high, it indicates that the research group has a high contribution to Tohoku University's research activities.

Case Study: Objectively Distribute Research Funds, Tohoku University

- The Tohoku University management team decided to create a special funding budget to allocate to selected research groups
- The challenge – objectively distribute funds to stimulate research activity

[Download the case study](#)

Building a global network to fight cancer

A case study: MD Anderson Cancer Center



- The VP of Global Academic Programs at The University of Texas MD Anderson Cancer Center wanted to create a network among researchers at MD Anderson and its 23 sister institutions around the world to help achieve its mission “Making Cancer History”
- The challenge – enabling researchers and administrators to easily identify experts across institutions and facilitate opportunities to collaborate

[Download the case study](#)

Scopus – background (continued)



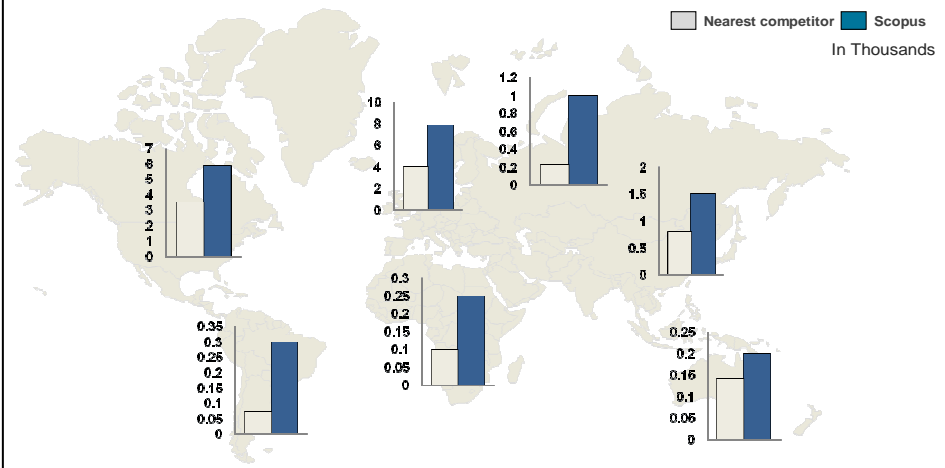
A rich and extended coverage including

- Abstracts and citations from > 5000 publishers
- 3,6 Million conference papers (10% of Scopus records)
- “Articles in Press” from more than 3000 titles
- 23 Million Patents
- 1,200 Open Access journals
- 80% of all Scopus records have an abstract
- Abstracts going back to 1823
- 40 languages covered
- 380 m integrated scientific websites via Scirus.com

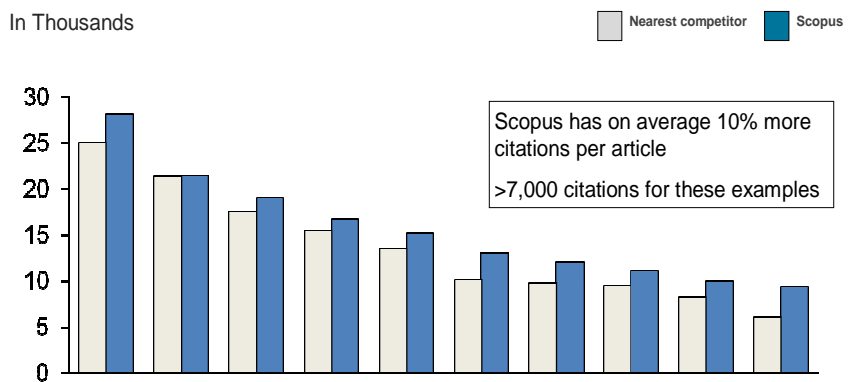
> 18,500 titles	17,800 Peer reviewed journals	600 Trade journals	350 Book series
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“It is broader in scope but also richer in different kinds of content. It is much easier to use and therefore has more immediate impact.”

– Chief librarian, The Food and Agricultural Organization of the United Nations



Wider coverage gives a more accurate picture of the research landscape



Number of citations to most cited articles in WoS and Scopus

- | | |
|---------------------------|---|
| Journal policy | <ul style="list-style-type: none"> • English language abstracts available • All cited references in Roman alphabet • Convincing editorial concept/policy • Level of peer-review • Diversity in provenance of editors • Diversity in provenance of authors |
| Quality of content | <ul style="list-style-type: none"> • Academic contribution to the field • Clarity of abstracts • Conformity with journal's aims & scope • Readability of articles |
| Citedness | <ul style="list-style-type: none"> • Citedness of journal articles in Scopus • Citedness of editors in Scopus |
| Regularity | <ul style="list-style-type: none"> • No delay in publication schedule |
| Accessibility | <ul style="list-style-type: none"> • Content available online • English-language journal home page • Quality of home page |

- Eligibility**
- Peer-review
 - English abstracts
 - Regular publication

