



Australian Government
Australian Research Council

Excellence in Research for Australia



28 August 2009
University of Wollongong



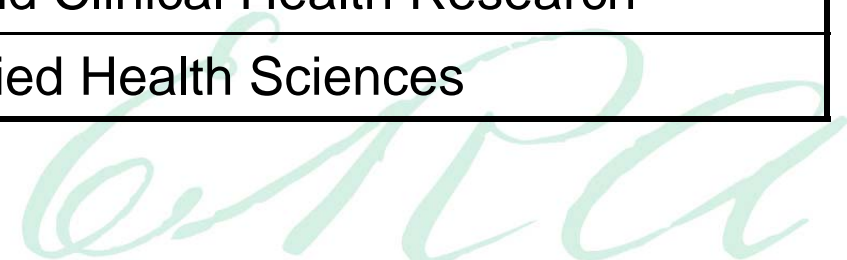
Objectives of ERA

1. establish an evaluation framework that gives government, industry, business and the wider community assurance of the excellence of research conducted in Australia's institutions;
2. provide a national stocktake of discipline-level areas of research strength and areas where there is opportunity for development in Australia's higher education institutions;
3. identify excellence across the full spectrum of research performance;
4. identify emerging research areas and opportunities for further development; and
5. allow for comparisons of Australia's research nationally and internationally for all discipline areas.



ERA Clusters

Cluster 1	Physical, Chemical and Earth Sciences
Cluster 2	Humanities and Creative Arts
Cluster 3	Engineering and Environmental Sciences
Cluster 4	Social, Behavioural and Economic Sciences
Cluster 5	Mathematics, Information and Computing Sciences
Cluster 6	Biological and Biotechnological Sciences
Cluster 7	Biomedical and Clinical Health Research
Cluster 8	Public and Allied Health Sciences



ERA timeframe

- Trials in 2009 for two Clusters only
 - PCE submissions opened June and closed July 2009
 - Outcomes in November 2009
 - HCA submissions opened and closed August 2009
 - Outcomes in December 2009
- Full ERA process expected in next round (will include PCE and HCA again)

ERA



2009 - Latest focus points for ERA

- 2009 Research Evaluation Committees for PCE and HCA established and announced
- Consultation on indicator matrices for eight clusters including proposed esteem indicators for next round
- Development of ranked refereed conference publications (tiered)
- Continue finalising the journal rankings lists for other Clusters – expert consultation

ERA

Next Round!

BIG

BANG



Research Codes

- RFCDs codes revised by Australian Bureau of Statistics
- Now ANZSRC codes – both grants and ERA

Two digit codes

- Eg., 21 history and archaeology

Four digit codes

- eg., 2103 Historical studies

Six digit codes

- Eg., 210302 Asian History



The Discipline Matrix

		Volume and Activity Analysis				Ranked outlets		Citation Analysis			Income			
		Eligible researchers profiled by Academic Level	Research Publication outputs by type	Proportion of total publication activity	Proportion of indexed journal articles with international co-authors	Journals	Refereed Conference Publications	Citations per paper against Australian and world Benchmarks	Centile analysis	Distribution of papers against relative citation rate bands	Category 1	Category 2	Category 3 (including sub-categories)	Category 4
02 Physical Sciences														
0201	Astronomical and Space Sciences	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
0202	Atomic, Molecular, Nuclear, Particle and Plasma Physics	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
0203	Classical Physics	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
0204	Condensed Matter Physics	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
0205	Optical Physics	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
0206	Quantum Physics	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
0299	Other Physical Sciences	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
03 Chemical Sciences														
0301	Analytical Chemistry	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
0302	Inorganic Chemistry	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
0303	Macromolecular and Materials Chemistry	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
0304	Medicinal and Biomolecular Chemistry	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
0305	Organic Chemistry	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
0306	Physical Chemistry (incl. Structural)	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
0307	Theoretical and Computational Chemistry	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
0399	Other Chemical Sciences	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
04 Earth Sciences														
0401	Atmospheric Sciences	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
0402	Geochemistry	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
0403	Geology	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
0404	Geophysics	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
0405	Oceanography	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
0406	Physical Geography and Environmental Geoscience	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓
0499	Other Earth Sciences	✓	✓	✓	✓	✓	⌘	✓	✓	✓	✓	✓	✓	✓



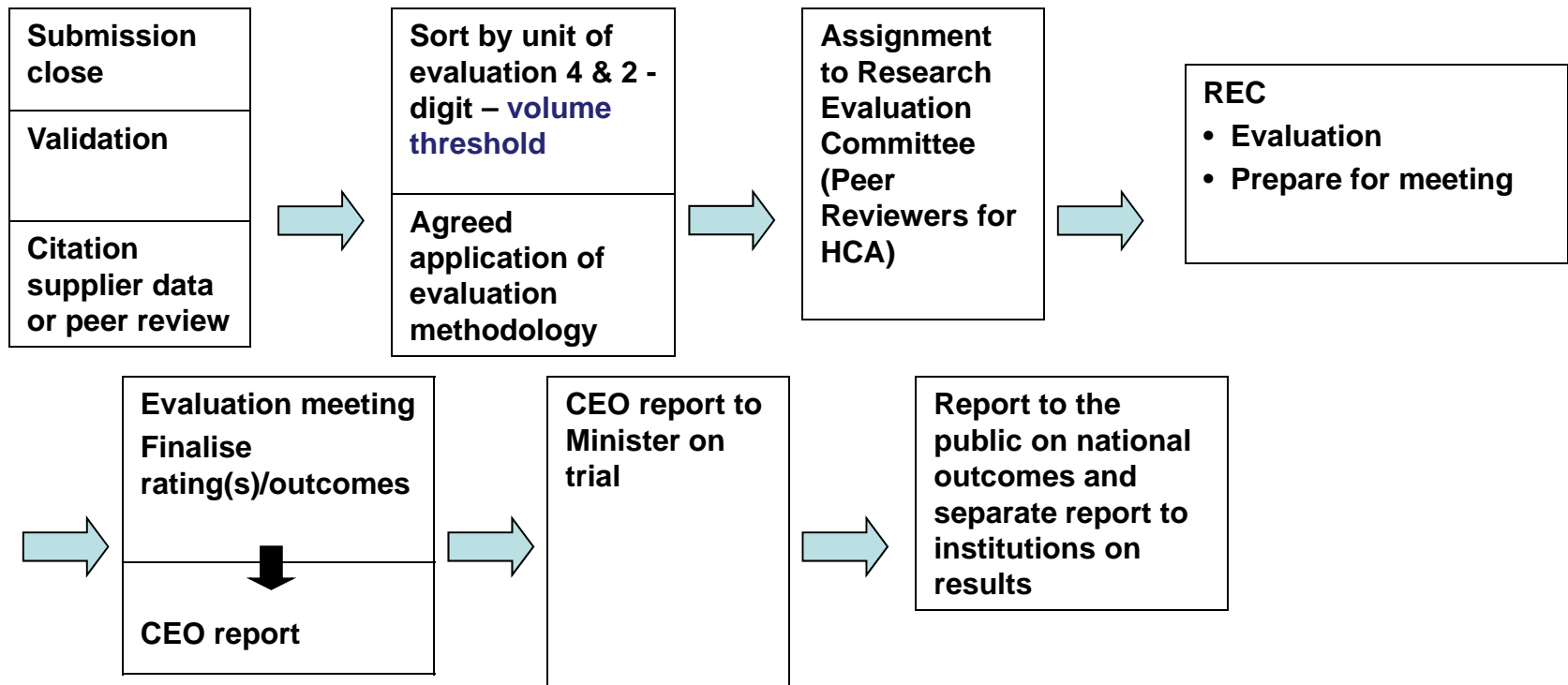
Overview of ERA Evaluation

Key Documents

Submission Guidelines

Indicator Benchmark Methodology

Evaluation Guidelines



Evaluation 2009

Outputs

Ranked Journals

Citation Analysis **or** Peer Review

Supporting Information

Volume and Activity – outputs and people

HERDC Research Income

Applied Indicators – Patents and Commercialisation income

2- digit background statement

Next round – *may* include:

New ranked outlets, esteem measures, applied measures, a potential mix of citation *and* peer review for some disciplines – the consultation documents will be on the **ARC website** soon

The ERA “Dashboard”

- A series of quantitative profiles presented to a Research Evaluation Committee as proxies of quality for a Unit of Evaluation.
- Examples of the quantitative profiles are in the Evaluation Guidelines
- Where relevant – Peer Review – access to outputs via repositories or provided by institution to the ARC for the reviewer.



Example Dashboard

Ranked Journals

Ranked Outlets: A01 Journals
 Institution: University X
 Discipline Cluster: PCE
 FoRcode: 0403
 FoRname: Geology

Journal Tier	No. of Papers	% of Papers	Aust. Inst. Distribution	Indicative World Distribution
A*	55	15.9%	11.8%	8.7%
A	61	17.7%	20.1%	19.2%
B	91	26.4%	33.1%	30.1%
C	138	40.0%	35.0%	42.0%
Total	345	100.0%	100.0%	100.0%

Ranked Outlets: A01 Journals
 Institution: University X
 Discipline Cluster: PCE
 FoR Level: four-digit
 FoR Number: 0403
 FoR Name: Geology

Journal Tier	No. of Papers					
	2002	2003	2004	2005	2006	2007
A*	5	6	8	10	11	15
A	8	12	11	6	9	15
B	10	11	11	19	21	14
C	11	20	18	26	26	25
Total	40	49	54	61	72	72
Distribution of output across reported	11.6%	14.1%	16.8%	17.5%	20.2%	20.2%

Citation Analysis

Citation Analysis: B1 Relative citation impact (RCI) against world and Australian institution average
 Institution: University X
 Discipline Cluster: PCE
 FoR Level: four-digit
 FoR Number: 0301
 FoR Name: Analytical Chemistry

Total Publications	Sum of Citations	Institution RCI against World Benchmark	Aust. Inst. Benchmark	% Papers Indexed
51	921	1.83	3.59	96.3%

Citation Analysis: B3 Citation Impact
 Institution: University X
 Discipline Cluster: PCE
 FoR Level: four-digit
 FoR Number: 0301
 FoR Name: Analytical Chemistry

No. of papers	RCI Class					
	Class I (0)	Class II (0.5-0.79)	Class III (0.8-1.9)	Class IIII (1.20-1.99)	Class V (2.00-3.99)	Class VI (4.0-7.99)
10	36	95	21	6	0	1

Citation Analysis: B2 Distribution of papers by set on world centile (no. cited and field average)
 Institution: University X
 Discipline Cluster: PCE
 FoR Level: four-digit
 FoR Number: 0301
 FoR Name: Analytical Chemistry

World centile	Institution			% Paper Indexed
	No. of papers (cumulative)	% of papers (cumulative)	Aust. Inst. Average % of papers (cumulative)	
1	3	5.9%	1.2%	
5	9	16.4%	6.2%	
10	13	23.0%	9.9%	
25	26	47.3%	25.9%	
50	42	76.4%	41.1%	
Total	55	100.0%	100.0%	96%
Un-cited	2			

Volume and Activity

Volume and Activity Analysis: C01 Research Publication Outputs
 Institution: University X
 Discipline Cluster: PCE
 FoR Level: four-digit
 FoR Number: 0302
 FoR Name: Film, Television and Digital Media

Category	No. of Outputs	% of Total
Journal Articles	0	
Book Chapters	1	
Books	2	
Conference Proceedings	1	
Original Creative Works	15	
Live Performance of Creative Works	1	
Technical/Research Creative Works	2	
Current or Former Broadcast Public Relations and Books	0	
Total in Group: 0302	22	

Volume and Activity Analysis: C03 FTE Profile by sex
 Institution: University X
 Discipline Cluster: PCE
 FoR Level: four-digit
 FoR Number: 0305
 FoR Name: Organic Chemistry

HERDC Level	No. of FTE	%
Level A	3.1	
Level B	3.9	
Level C	2.5	
Level D	1.0	
Level E	1.5	
Other	1.0	
Total	13.0	

Volume and Activity Analysis: C05 Headcount by sex
 Institution: University X
 Discipline Cluster: PCE
 FoR Level: four-digit
 FoR Number: 0306
 FoR Name: Organic Chemistry

HERDC Level	Headcount of FTE	%
Level A	8.0	
Level B	5.0	
Level C	6.0	
Level D	2.0	
Level E	4.0	
Other	10.0	
Total	36.0	

Example Dashboard

HERDC Income

Income: D03-D04 Preparing Research Income					
Institution: University X					
Discipline Cluster: PCE					
FoR Level: two-digit					
FoR Number: 03					
FoR Name: Chemical Sciences					
HERDC Category	Research Income Type	2005	2006	2007	Total for period
1	Academic competitive grants	\$3,171,000	\$10,200,000	\$9,000,000	\$22,371,000
2	Other public sector research income	\$820,000	\$2,130,000	\$3,500,000	\$6,450,000
3	Industry and other research income	\$656,214	\$9,121,419	\$2,286,200	\$12,063,833
4	CRIC research income	\$2,300,000	\$2,100,000	\$1,100,000	\$5,500,000
Total income - All types		\$6,922,214	\$16,484,249	\$16,486,000	\$39,892,463
Total FTEs					48.7

Income: D04 Preparing Research Income (Category 3 breakdown)					
Institution: University X					
Discipline Cluster: PCE					
FoR Level: two-digit					
FoR Number: 03					
FoR Name: Chemical Sciences					
Category 3 Research Income Type	2005	2006	2007	Total for period	
300 Australian	\$69,000	\$295,000	\$1,420,000	\$1,784,000	
300 International A	\$69,000	\$181,249	\$606,000	\$856,249	
300 International B	\$438,214	\$366,000	\$200,000	\$1,004,214	
Total income - Category 3		\$692,214	\$772,249	\$2,226,000	\$3,690,463
Total FTEs					48.7

Research Income: D01 Preparing Research Income							
Institution: University X							
Discipline Cluster: PCE							
FoR Level: two-digit							
FoR Number: 0301							
FoR Name: Analytical Chemistry							
HERDC Category	Research Income Type	No. of grants	Total Amount	Average \$ per grant	Average \$ per FTE	Ratio against benchmark \$ per FTE	
1	Academic competitive grants	4	\$690,614	\$172,654	\$14,181	\$16,200	0.88
2	Other public sector research income		\$1,292,493		\$26,538	\$19,000	1.43
3	Industry and other research income		\$1,159,888		\$24,559	\$16,500	1.49
4	CRIC research income		\$1,148,833		\$23,568	\$31,201	0.76
Total FTEs		48.7					

Applied indicators

Applied: F01 Patents	
Institution: University X	
Discipline Cluster: PCE	
FoR Level: four-digit	
FoR Number: 0307	
FoR Name: Theoretical and Computational Chemistry	
Country	No. of patent sealed
Australia	3
Japan	0
United States	2
Europe	1
Other international	1
Triade	1
Total Patents in reference period	8

Applied: F04 Commercialisation income			
Institution: University X			
Discipline Cluster: PCE			
FoR Level: four-digit			
FoR Number: 0301			
FoR Name: Analytical Chemistry			
Research Income by Year			
2005	2006	2007	Total for period
\$15,000	\$15,000	\$20,000	\$50,000

Applied: F04 Commercialisation income					
Institution: University X					
Discipline Cluster: PCE					
FoR Level: four-digit					
FoR Number: 0301					
FoR Name: Analytical Chemistry					
FTE	Total Amount	\$ per FTE	Aust. Inst. Average \$ per FTE	Ratio of Inst. against Average \$ per FTE	
3.1	\$50,000	\$16,129	\$24,000	0.67	

Background Statement

REC's will be expected to develop and document evaluation for the PCE and HCA Clusters trial. REC members, including a 'mock evaluation' us and 'mock evaluation' are expected to inform the working methods for the purposes of evaluation. Inform the development of working methods for explanatory material may be provided by the AR process.

Applied: F03 Registered designs		
Institution: University X		
Discipline Cluster:		
FoR Level: two-digit		
FoR Number: 1904		
FoR Name: Studies in Creative Arts and Writing		
FoR Code	Division Name	No. of registered designs
19	Studies in Creative Arts and Writing	12



[Home](#)

[Logout: Ms Liz Visser](#)

FoR Group: Geochemistry

Allocated tasks	Background	View indicators	Evaluation
<ul style="list-style-type: none">Select Indicator<ul style="list-style-type: none">Ranked outlet journalsCitation analysisVolume & activityHERDC research incomeApplied indicators			

ERA Indicators

- History of development and selection
- Proxies for quality
- Discipline specific-practices in interpretation
- 2009 trial of current indicators
- Next round - consultation on indicators for eight clusters
- **Mythbusters!** – indicator weightings, formulas, outputs divided by FTE.....



Ranked Journals

- The **portal** used to enter the domain of journal articles
- Only **one** of a number of indicators on the “Dashboard”
- It assists with the **assignment** of a research output to the appropriate discipline(s) and cluster
- Required for development of discipline-specific **benchmarks** for citation analysis
- **Note discipline-specific practices** eg., nursing



Ranked Journals for next round

- What is happening with the journal ranking process for next round?
- What do the next steps involve?
- Who can be involved?
- **lauren.johnston@arc.gov.au**
- How much work is involved?
- What about international reviewers?

Peer Review - summary

- Peer review will be used as an indicator for disciplines that do not have a sufficiently robust range of other indicators, eg HCA.
- Peer review is one “indicator” on the Dashboard
- Institutions select up to 20% of outputs from Units of Evaluation – four and two-Digit Units of Evaluation
- The Research Evaluation Committee will select a representative sample of outputs to review to inform their assessments, and also have access to reports from external peer reviewers.



Interdisciplinary Research

- ERA is a discipline-based evaluation
- Re-assignment of two-digit and multi-disciplinary outputs
- Discipline Profile and its use
- Institutional tools (not part of evaluation)



Field of Research Re-Assignment

DIVISION 20 LANGUAGE, COMMUNICATION AND CULTURE

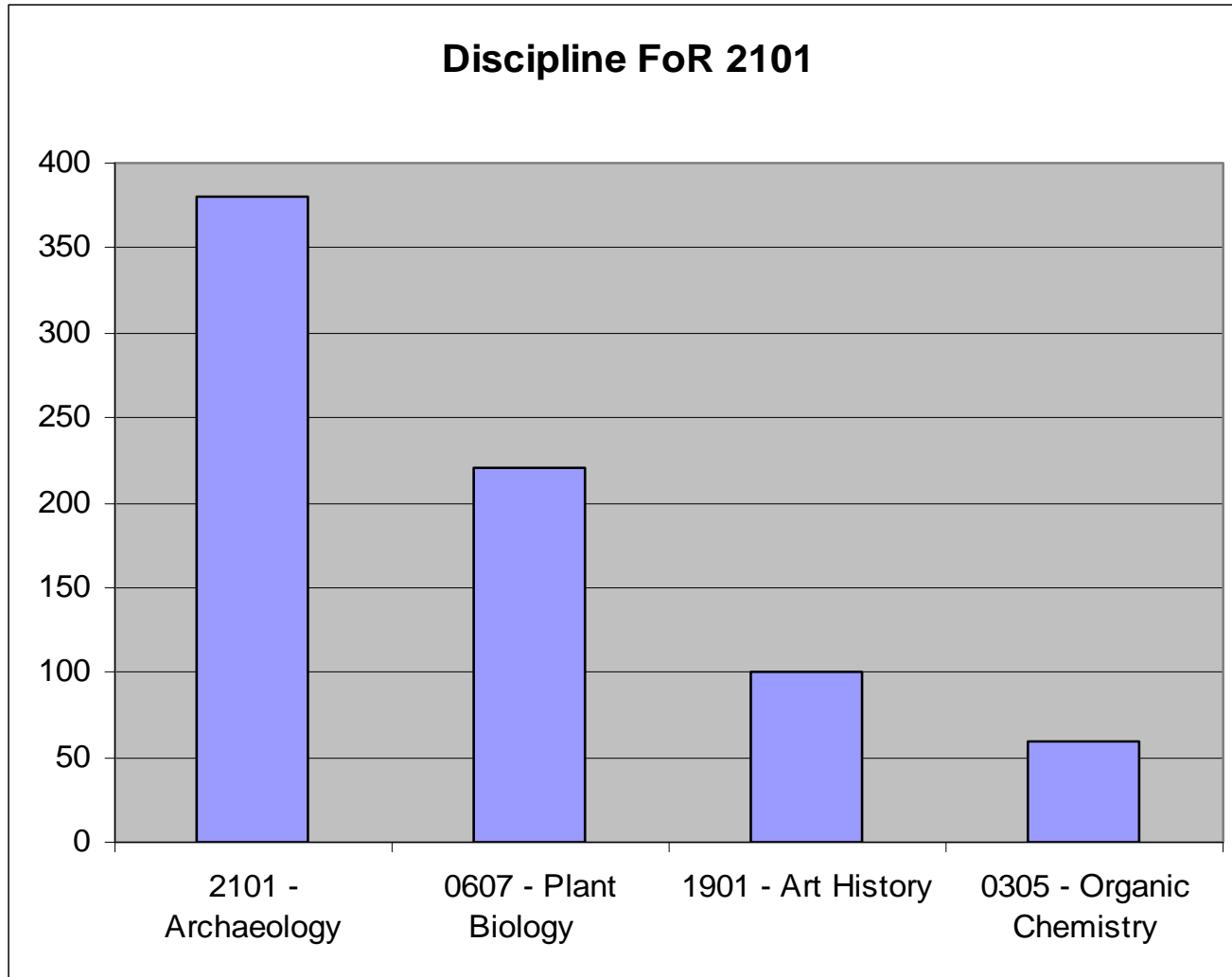
2001 Communication and Media Studies	34
2002 Cultural Studies	47
2003 Language Studies	16
2004 Linguistics	83
2005 Literary Studies	46
2099 Other Language, Communication and Culture	38



The diagram shows a total count of 63 articles for Division 20. Red arrows point from this total to each of the six sub-categories listed below it, indicating that the 63 articles are being re-assigned to these specific fields.

63 General Language, Communication and Culture articles to be re-assigned by the ARC

Discipline Profile and its use – 4-digit



Institutional Tools

- Institutions may tag research outputs with two institutional codes and two research theme codes
- This will assist in recompiling data
- The tagging will not be used for ERA evaluation purposes



What data will the ARC return to Universities?

Institution report

- Static citation count for each indexed article
- Australian (HEP) benchmarks for each year of the reference period (by FoR)
- World benchmarks for each year of the reference period (by FoR)
- Centile citation thresholds for each year of the reference period (by FoR)
- Ratings for Units of Evaluation, plus Committee comments



Key consultation issues for next round

- Selecting best suite of indicators for each discipline in the eight Clusters
- Feasibility of collection of possible esteem data
- Creative Arts research outputs and new supporting information for those items earmarked for peer review



Further information?

- www.arc.gov.au/era
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