Australian Government

Australian Research Council

Australian Research Council and ICT Research

Professor Brian Yates

Executive Director, Engineering, Mathematics and Information Sciences

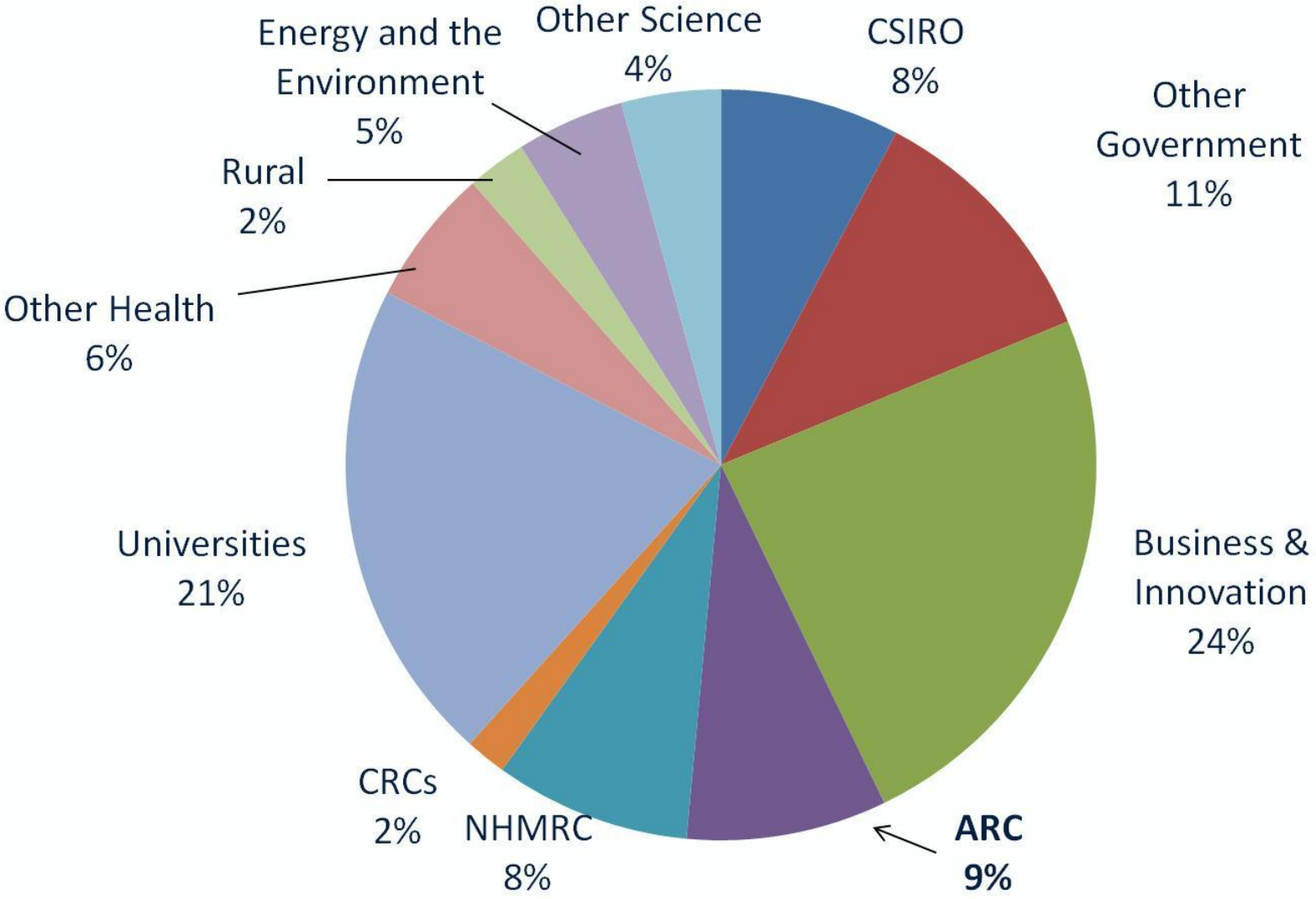
ICT Deans, Annual Meeting, Fremantle, 8-9 July 2013

Research

Overview

- ARC
- ICT research
- ERA

Government Investment in R&D



The Australian Research Council

National Competitive Grants Program
$884 million

Evaluation and Policy

Discovery & Fellowships
$551 million

Linkage & Centres
$333 million

Excellence in Research for Australia

National Competitive Grants Program

- Funding for the NCGP in 2013-14 is $884 million
- 28 June announcement of $101.8 million in funding for Linkage Projects scheme (2013) supporting 306 projects (18 in IT areas)
- Current rounds of FL, FT, DECRA, DP, IN, LIEF, COE, ITRP
- Support for people, research, facilities, partnerships

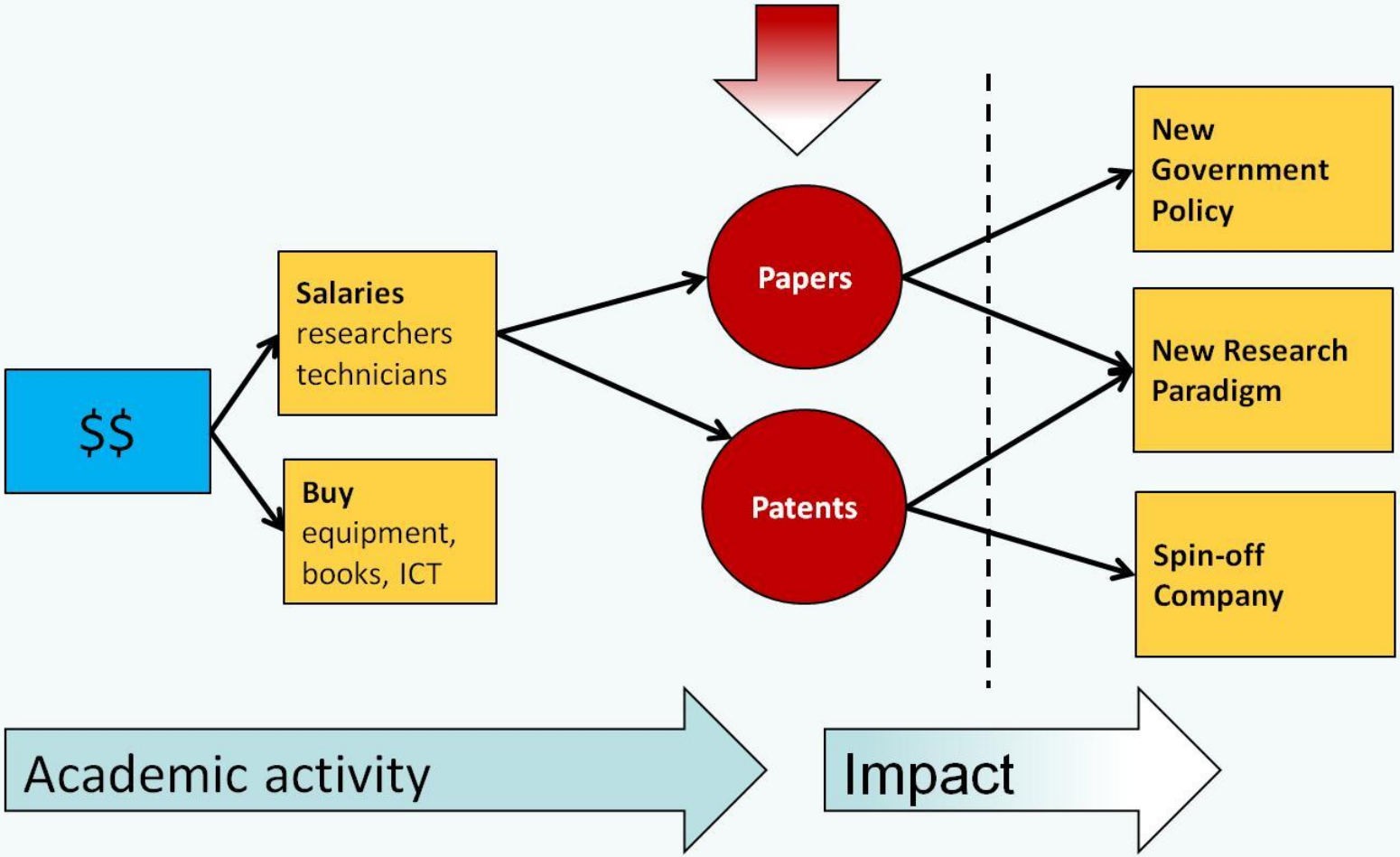
ARC developments

- New schemes:
  - ITRP
  - Centres of Excellence
  - Future Fellowships round 6
- Revision and harmonisation of funding rules
- Updating of assessor database (FoR codes & keywords, new assessors)
- Open access, open data, research impact
- New CEO – Prof Aidan Byrne
- New Executive Director for EMI

Open Access – Leveraging the Benefits

- Starting in January 2013, it is mandated by ARC funding rules that completed projects must make their publications available on an open access repository.
- http://www.arc.gov.au/applicants/open_access.htm
- Questions remain:
  - How open is open?
  - Timeframes, 'loopholes', is it fast enough?
- An open future: Open Data and Open Innovation

Where does the impact begin?

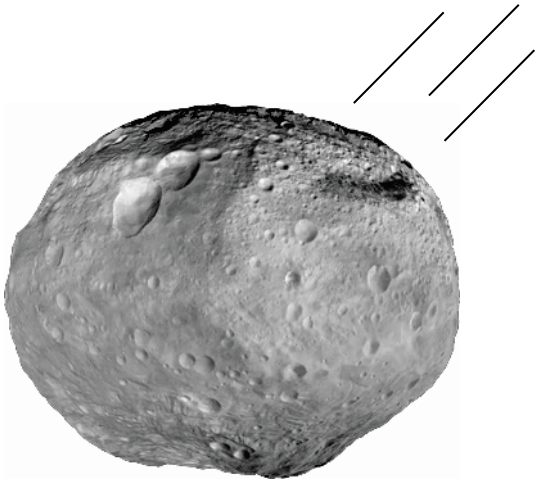


What is impact?

- Every aspect of the modern world is shaped by research. The impact of research is everywhere.

BUT

- Need to take care not to over-engineer
- Need to disentangle contributions
- Need to cope with diversity
- Need to avoid perversity
- Need to be clear about the why



ARC's next steps in Research Impact

- Embedding impact into some funding rules
- Identifying common, agreed reporting of impact
- Public consultation led by Department
- Enable a possible future assessment of impact using common data and language

ARC's next steps in Research Impact

- Research Impact Principles and Framework: http://www.arc.gov.au/general/impact.htm

- Departmental discussion paper
  "Assessing the wider benefits arising from university-based research"
  (Research Impact Assesment)
  19 June – 16 August 2013

ICT research

- Successful Linkage Projects in ICT just announced
  - artificial intelligence and image processing
  - computer software
  - information systems
  - library and information studies
- Success rates for ICT – steady or slight increase
- Number of cross-discipline proposals – decreasing
- Number of female participants – steady
- Average career age of participants – increasing


predictive
needs
facial
automated
speech
creative
However
approach
advanced
robots
Pitchwise
reliability
important
expertise
video
training
requirements
VR
pathology
new
developments
based
process
computing
demands
methods
widespread
cost
tracking
mobile
deliver
effective
accuracy
aviation
environments
surveys
thereby
University
in-memory
workload
also
information
enhanced
areas
support
generation
model
costs
techniques
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key
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fabrication
recognition
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image
interpretation
scanner
provide
real
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result
partner
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challenge
application
set
discovery
business
search
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conditions
operating
including
system
technologies
analysis
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applications
incorporate
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method
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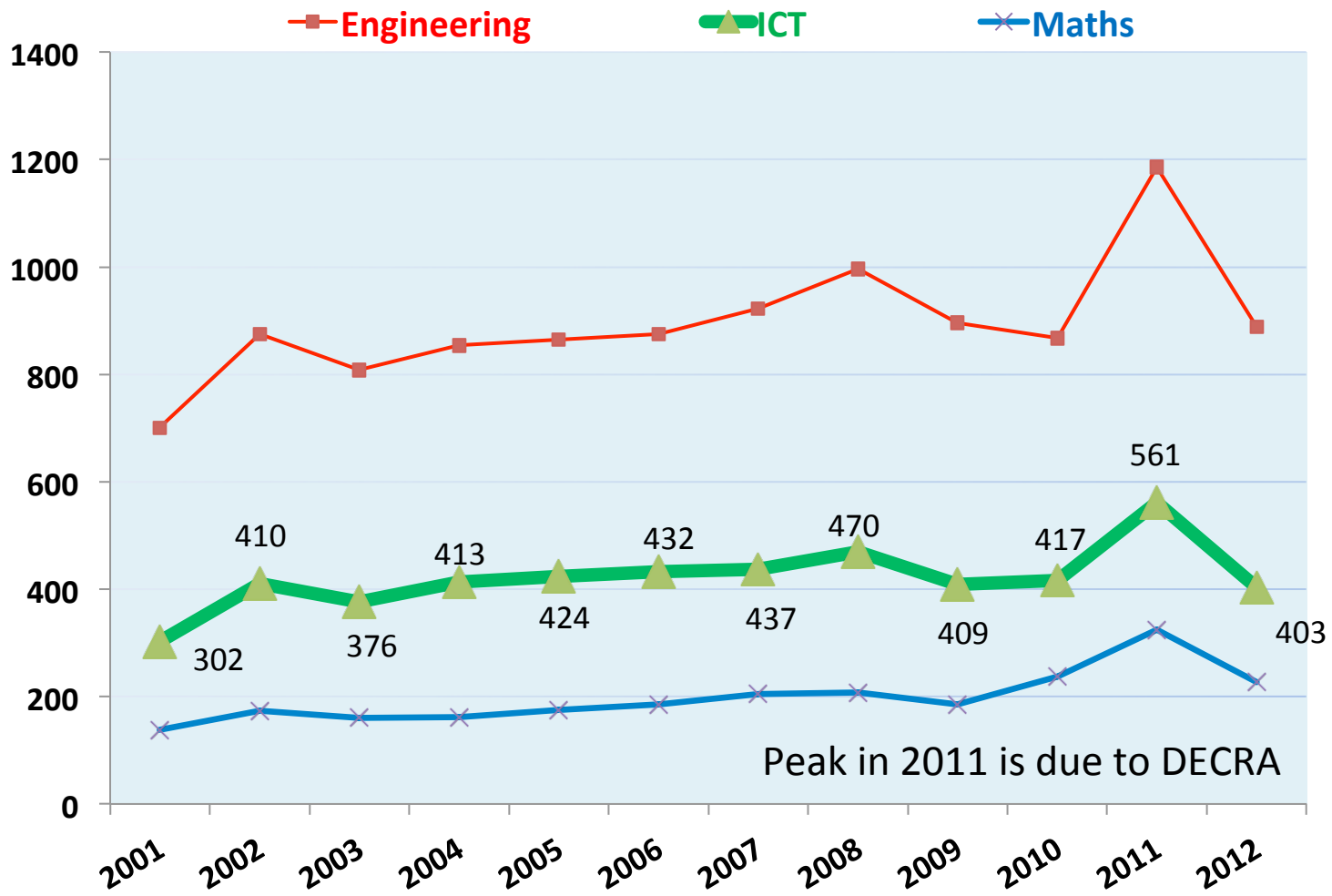
industries
achieve
using
reality
light
contouring
computer
small
aims
trainees
used
much
traditional
value
online
improved
processes
software
data
within

Background

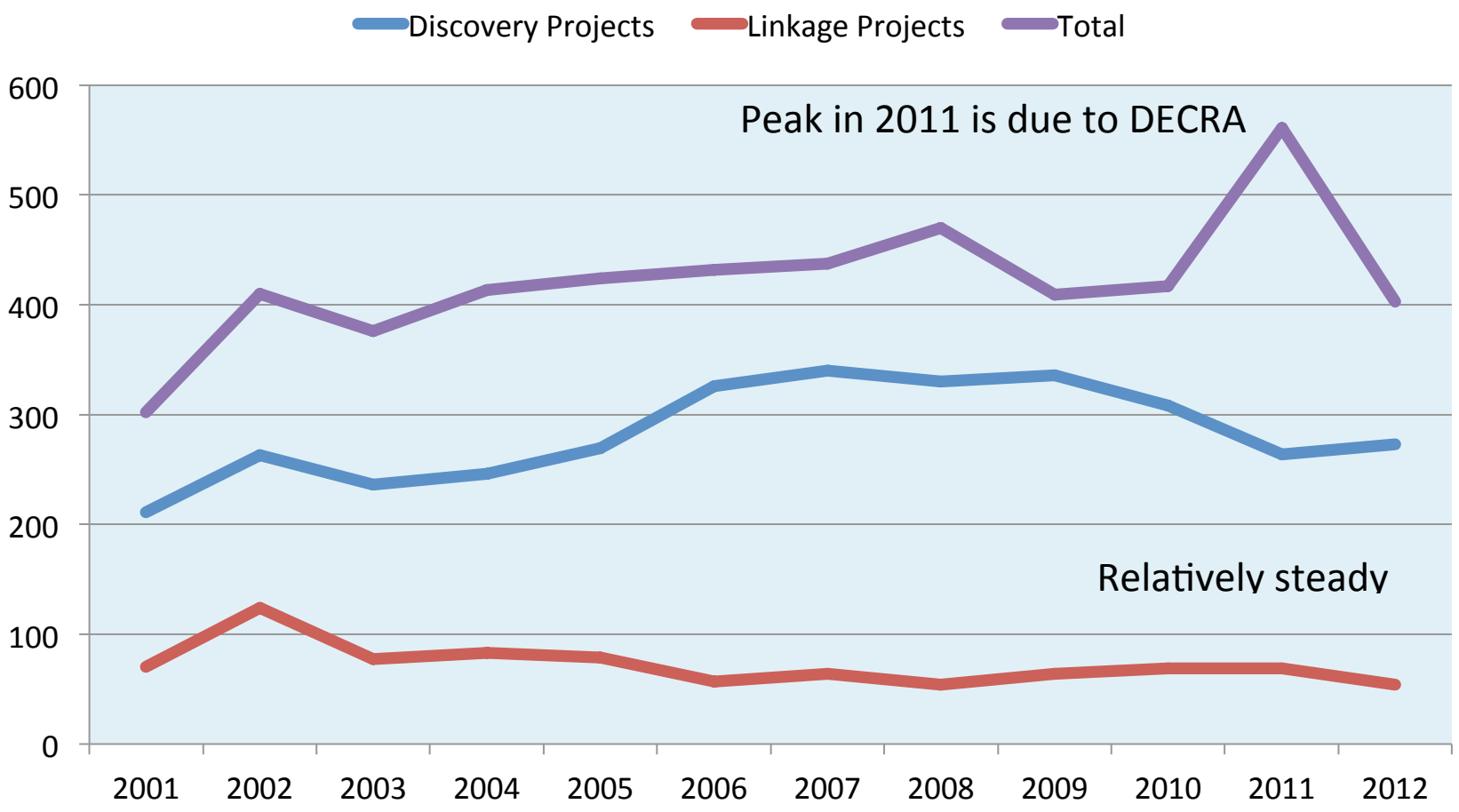
- ICT compared with Engineering and Maths
- Selected FoR/RFCD codes

Classification Type	Two-digit code	Two-digit code text
FOR08	09	Engineering
RFCD98	29	ENGINEERING AND TECHNOLOGY
FOR08	08	Information and Computing Sciences
RFCD98	28	INFORMATION, COMPUTING AND COMMUNICATION SCIENCES
FOR08	01	Mathematical Sciences
RFCD98	23	MATHEMATICAL SCIENCES

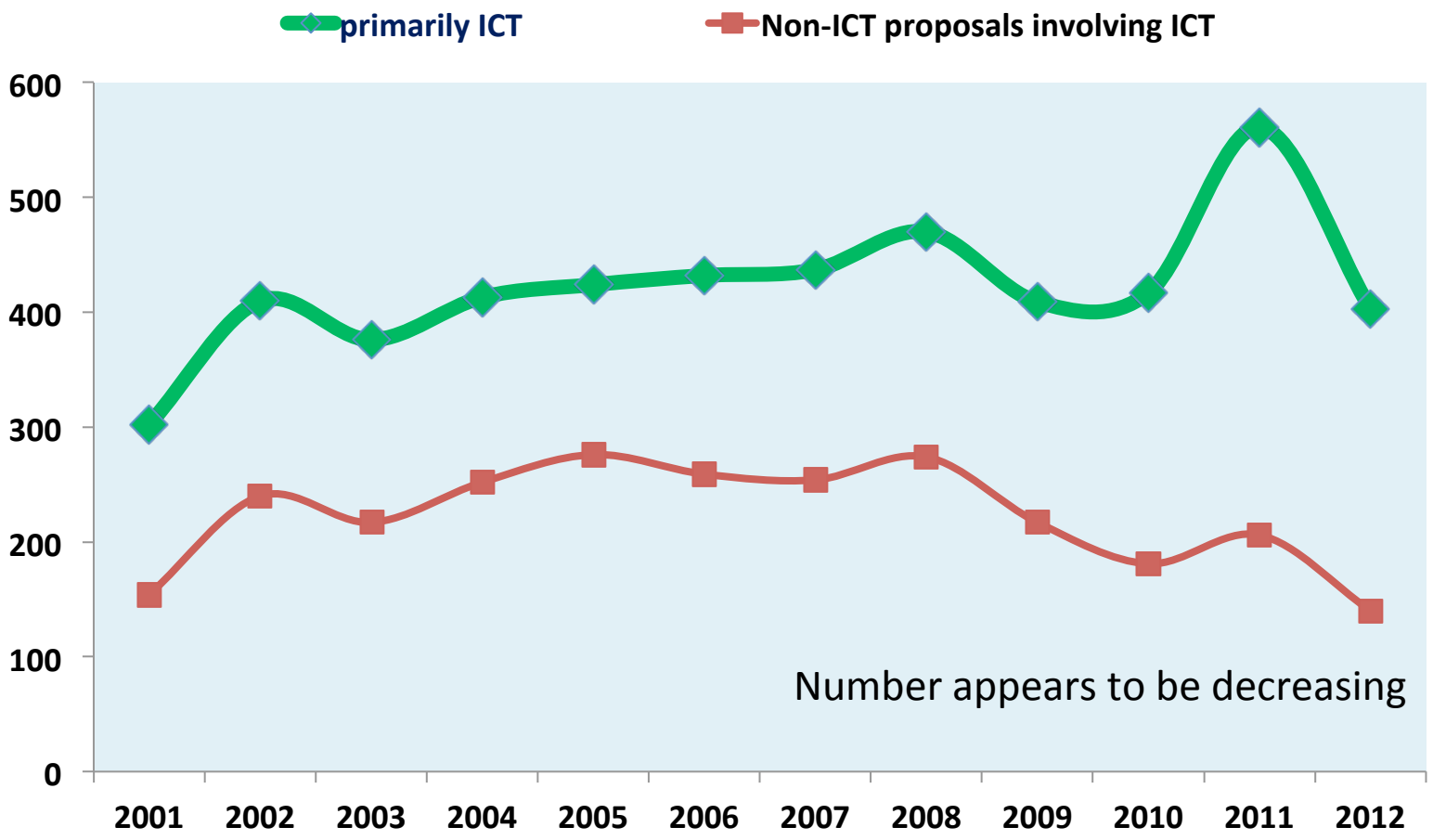
Proposals received in ICT compared to Engineering and Maths, all ARC schemes (by submit year)



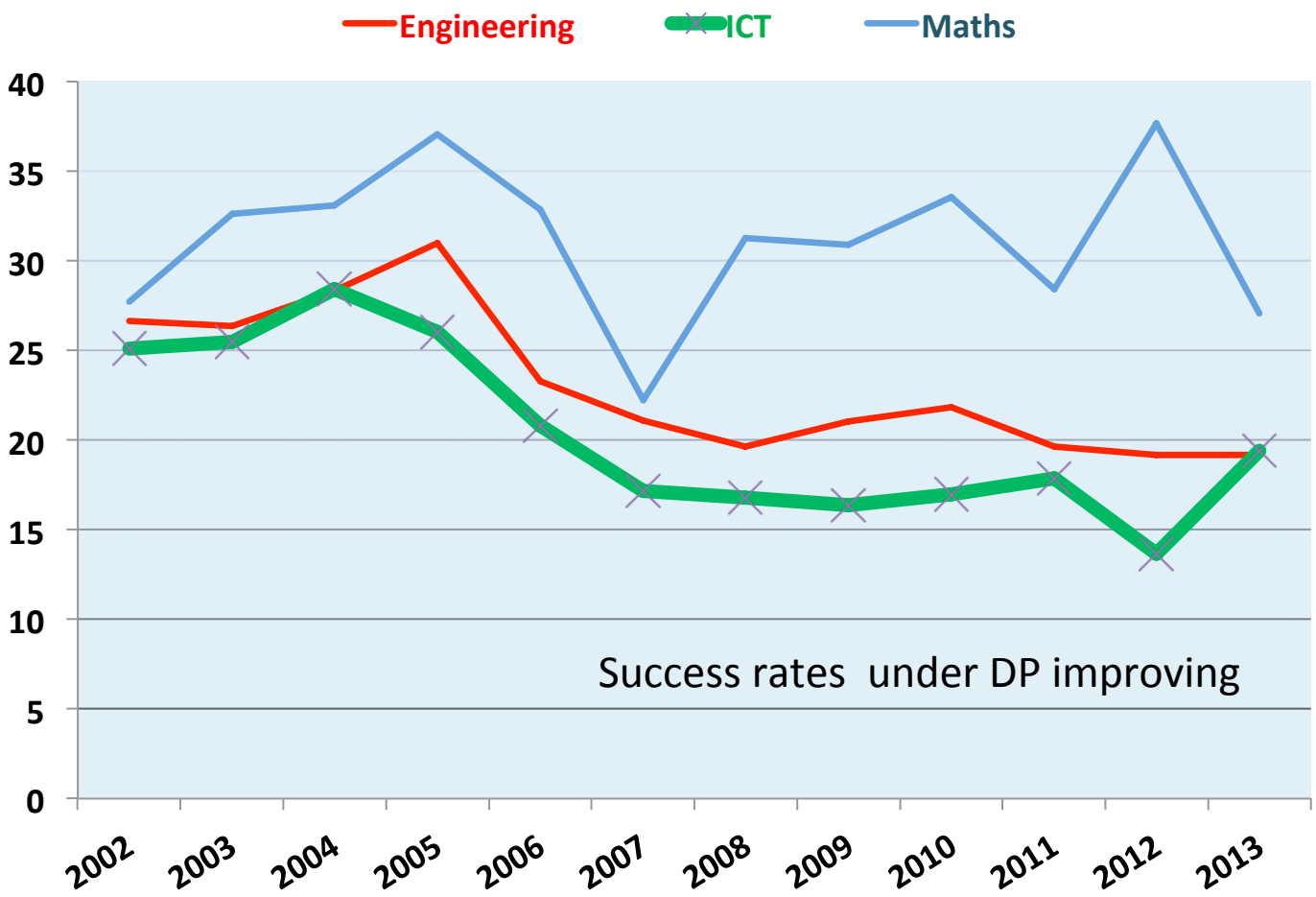
Proposals received in ICT for DP and LP (by submit year)



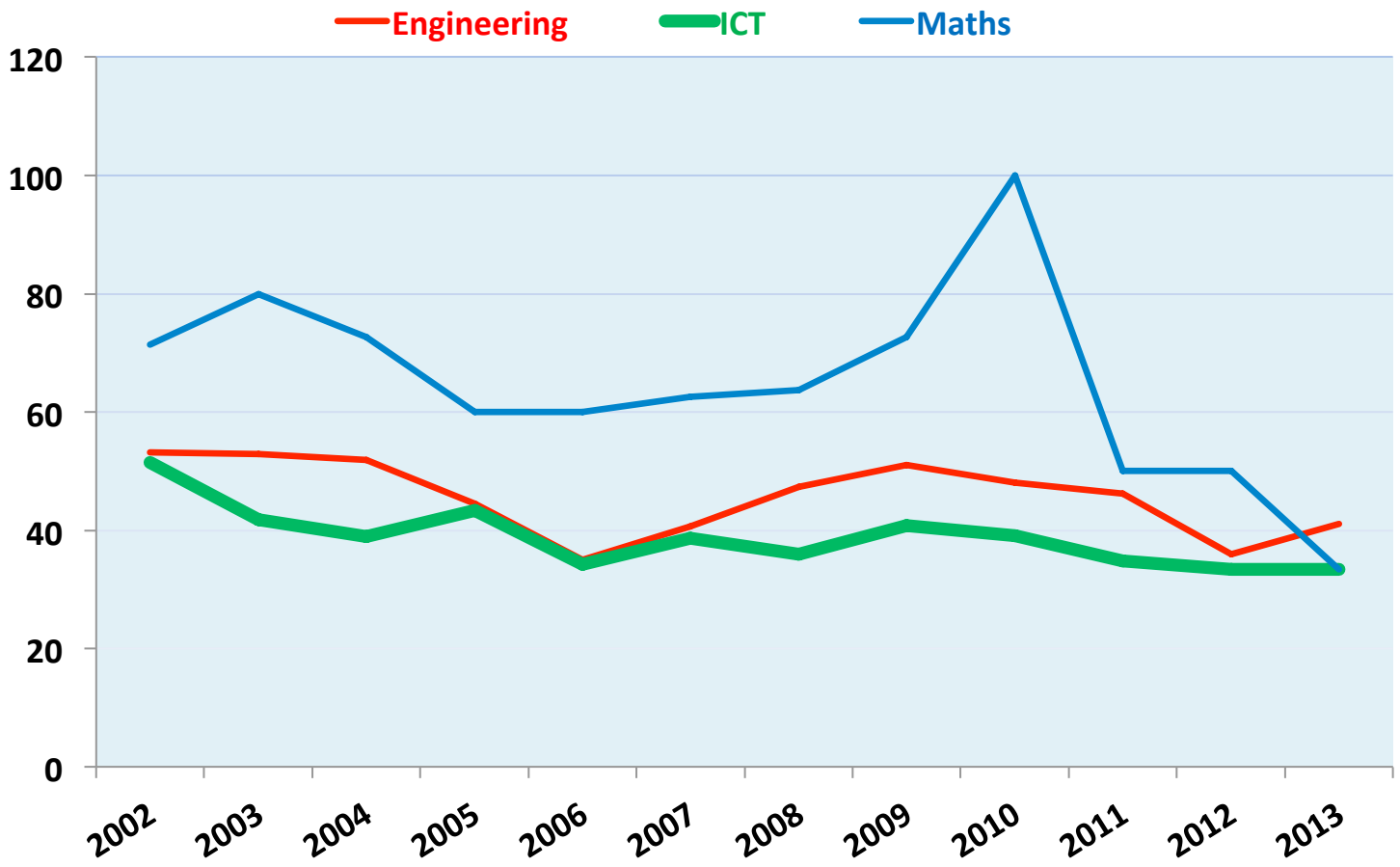
Number of non-ICT proposals involving ICT component (by submit year)



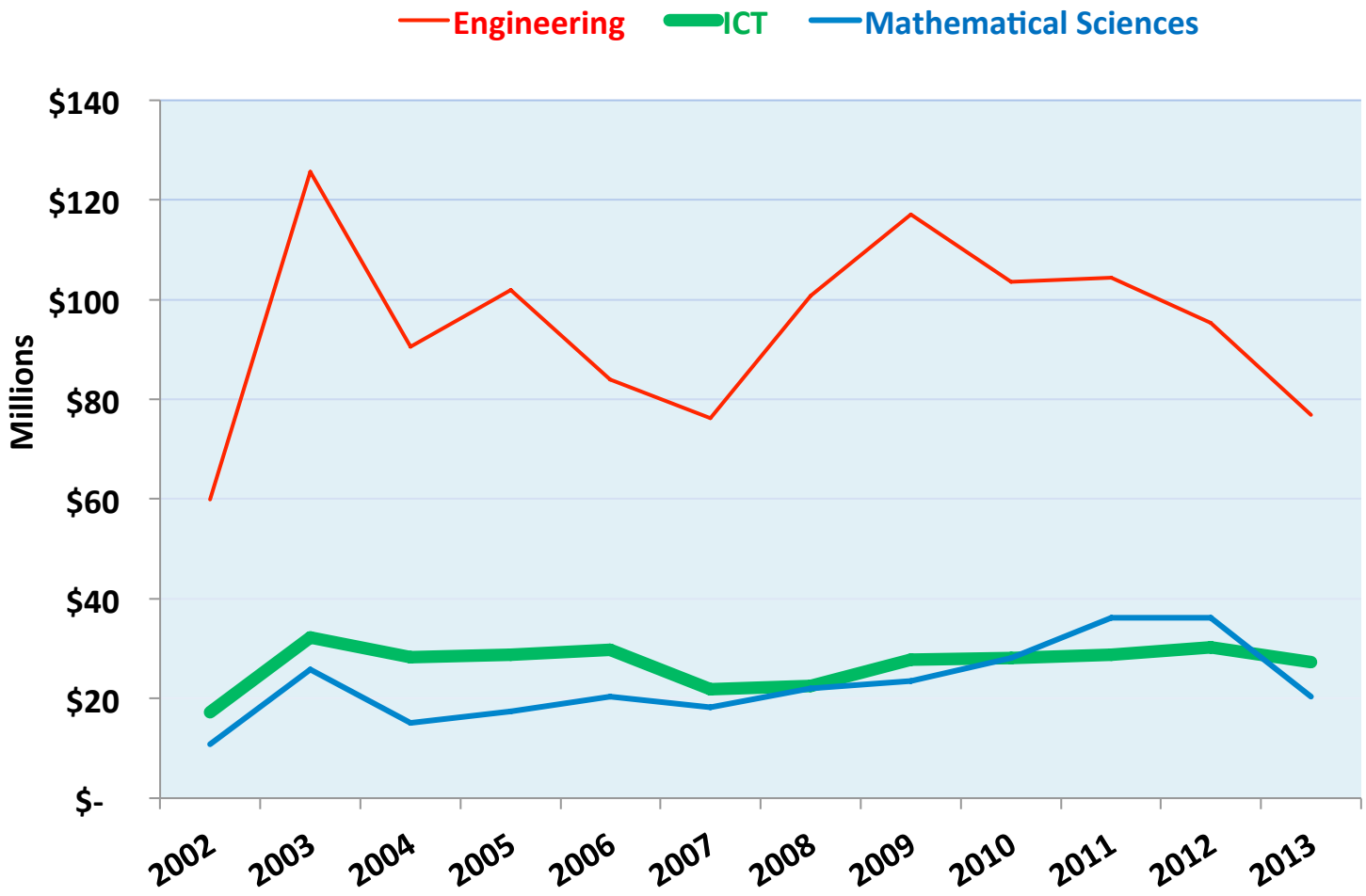
Success rate (%) of Discovery Projects proposals by commencement year



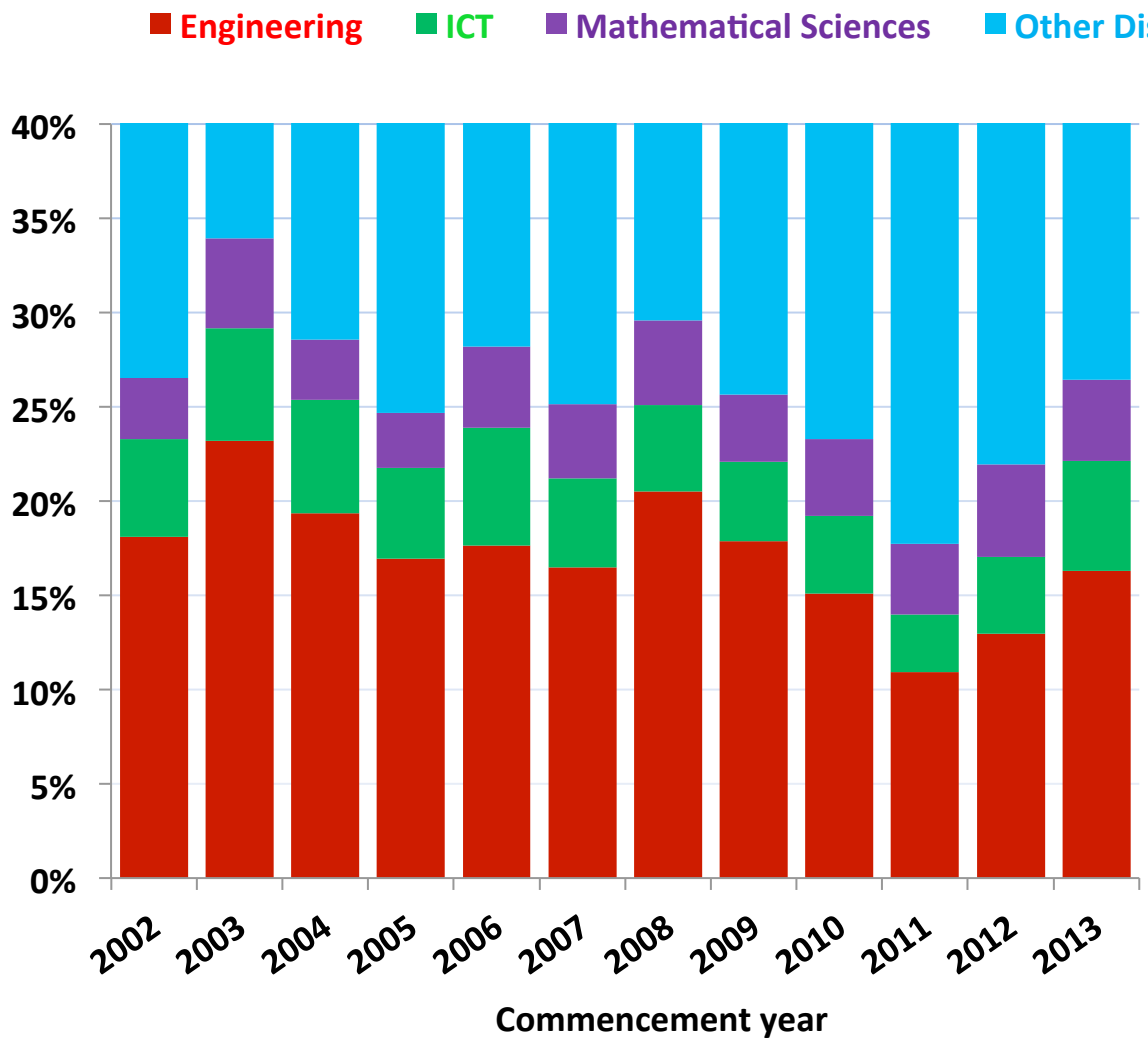
Success rate (%) of Linkage Projects proposals by commencement year



ARC funding by commencement year
(funding for NICTA not included, data for 2013 not complete)



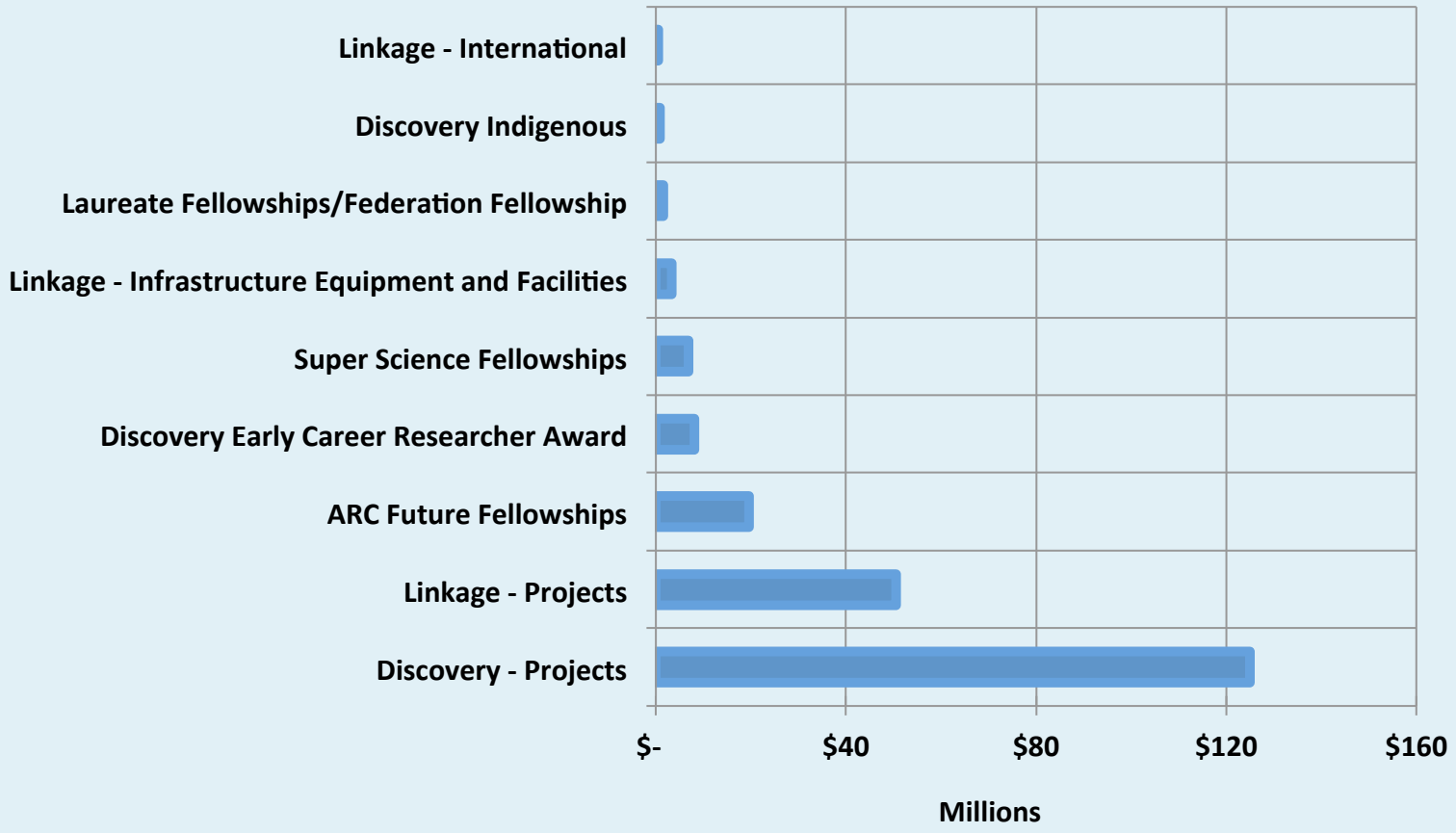
Proportion of funding in all ARC schemes by commencement year



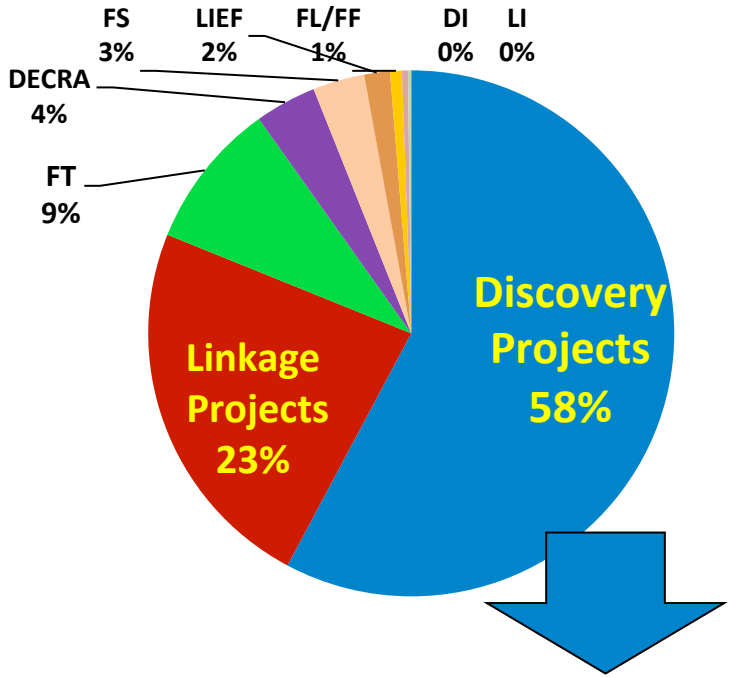
Decrease in 2011 is due to the ARC Centres of Excellence

ARC Funding for ICT by scheme (2006 to 2013 inclusive)

(not including Future Fellows and Laureates for 2013)

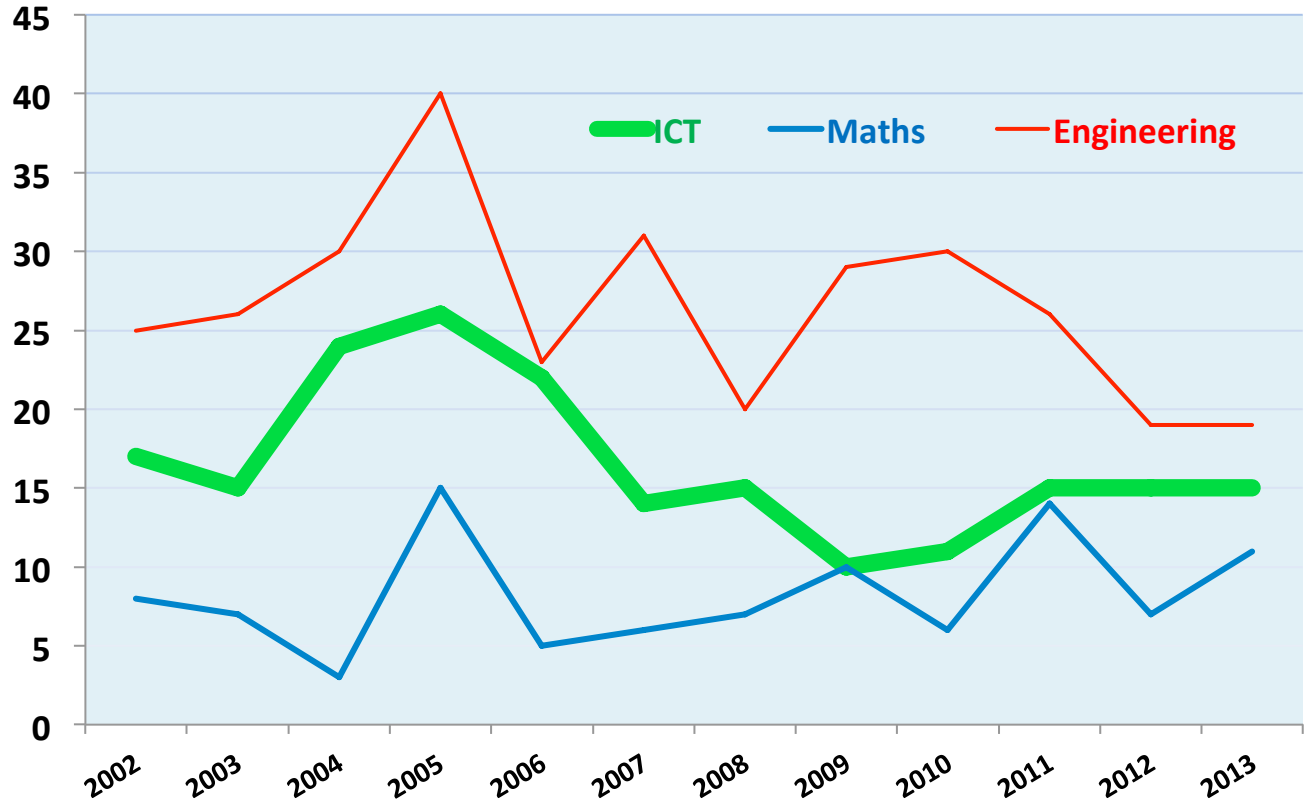


Share of ARC funding for ICT by schemes (2006 - 2013)

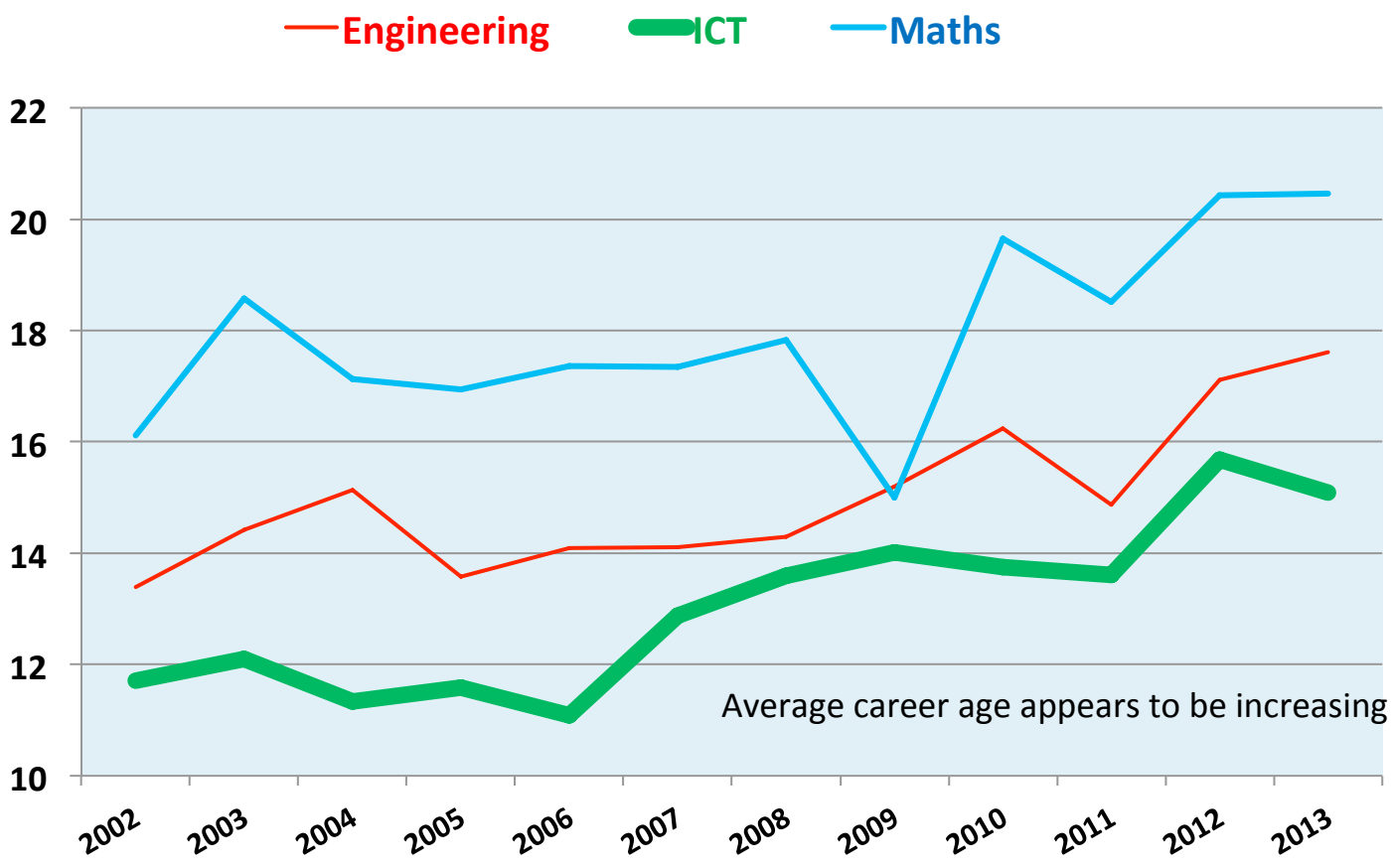


Four digit code	Total DP funding (2002 to 2013) - $ million
ARTIFICIAL INTELLIGENCE AND IMAGE PROCESSING	$ 67.6
INFORMATION SYSTEMS	$ 52.7
COMPUTATION THEORY AND MATHEMATICS	$ 19.3
COMPUTER SOFTWARE	$ 17.5
DATA FORMAT	$ 17.0
DISTRIBUTED COMPUTING	$ 1.9
OTHER INFORMATION, COMPUTING AND COMMUNICATION SCIENCES	$ 1.8
OTHER INFORMATION AND COMPUTING SCIENCES	$ 1.0
LIBRARY AND INFORMATION STUDIES	$ 0.9

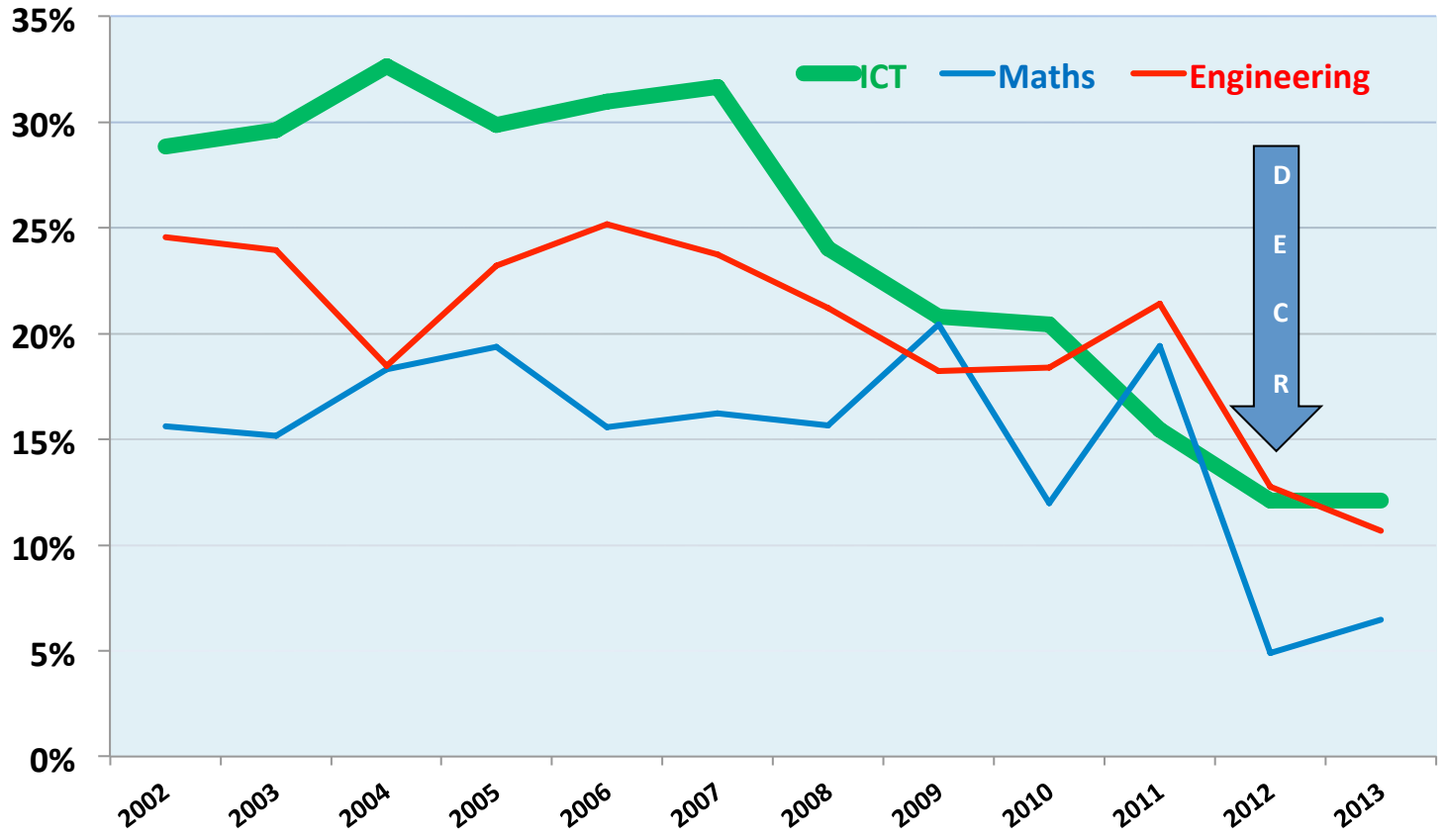
Number of female Chief Investigators on funded Discovery Projects grants each year



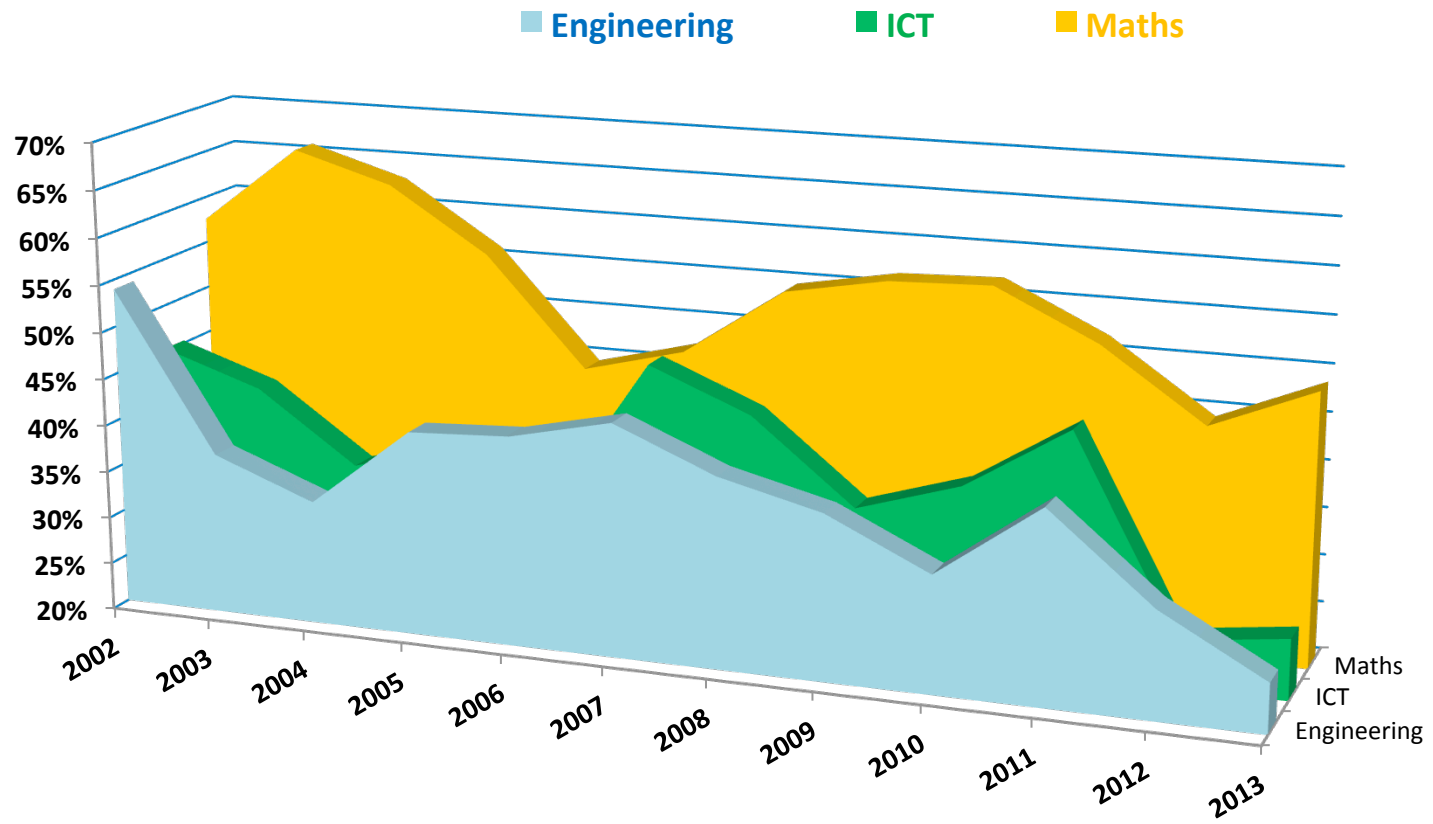
Average career age (years after PhD) of researchers on funded DP projects each commencement year



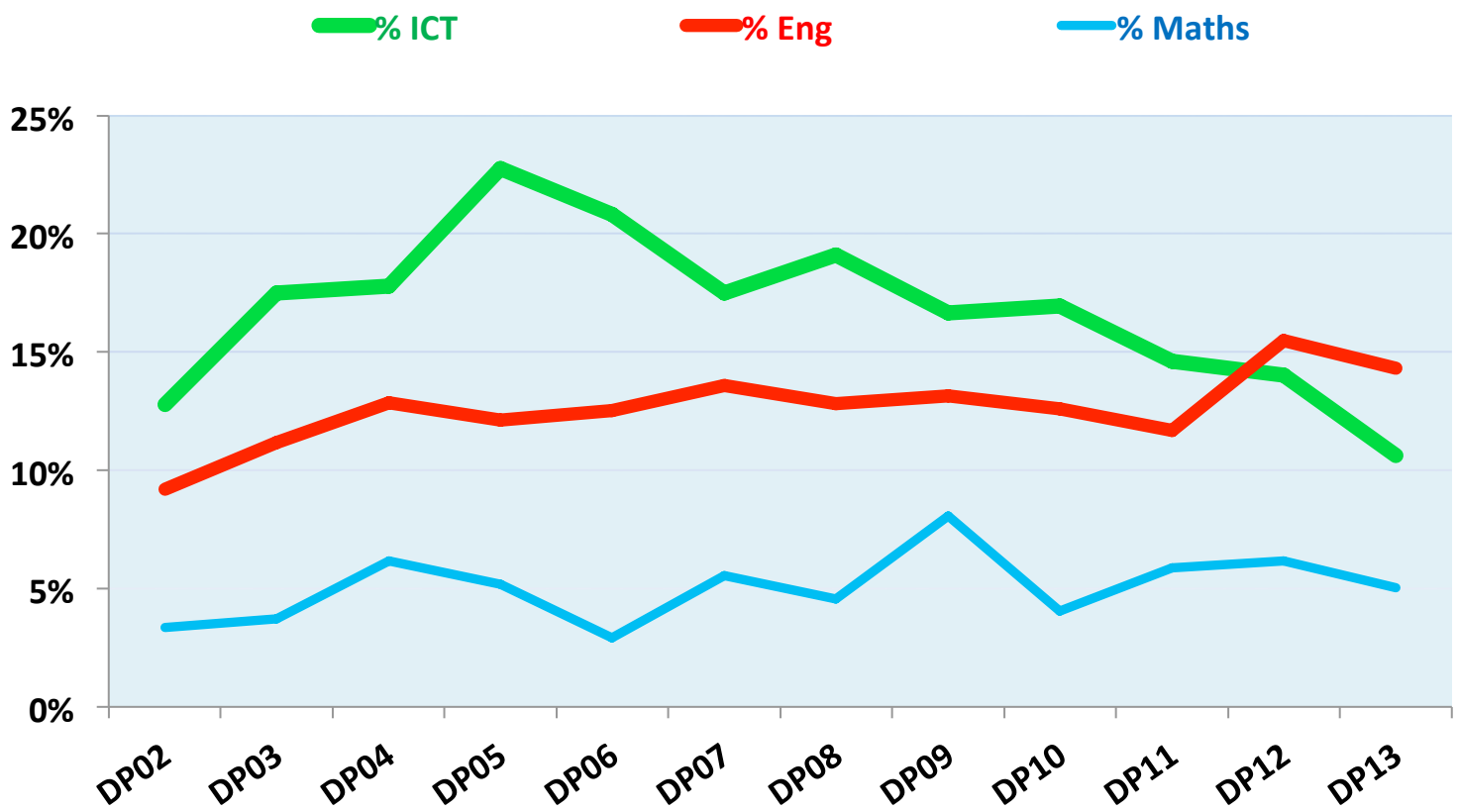
Proportion of researchers with career age below 5 years in funded DP projects (DECRA launched since 2012)



Proportion of single-CI proposals in funded Discovery Projects grants



Proportion of DP proposals involving researchers who have been on more than 5 DP proposals without success during DP02 to DP13



Other ARC funding for ICT

- Co-funded Centre

  NICTA

  Government funding 2002-2013: $477m (ARC $236m)

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ERA 2012

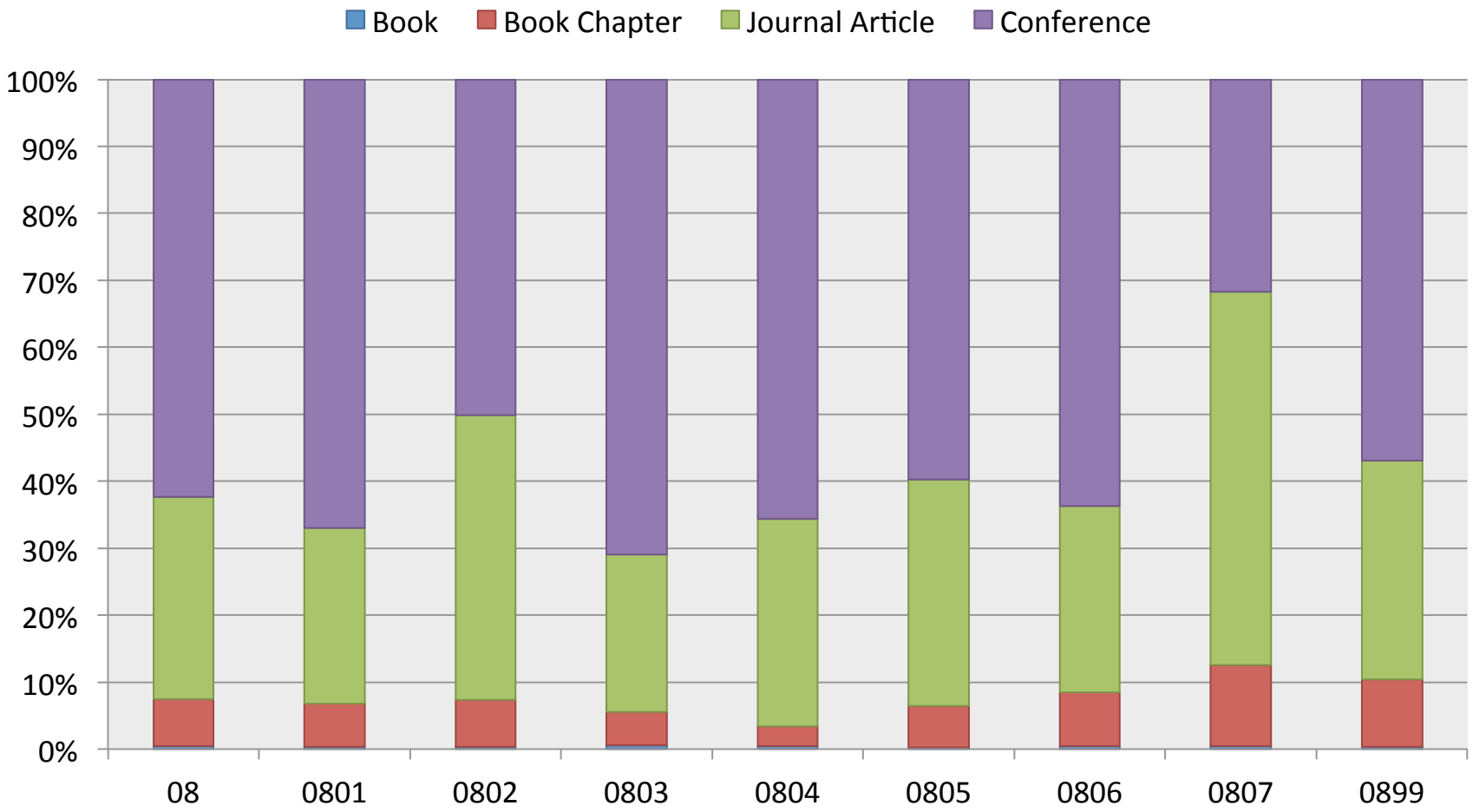
Dr Tim Cahill

Director, Excellence in Research for Australia
Australian Research Council

Key Changes for ICT ERA 2012

- Conference publications incorporated in 08 threshold calculation for assessment
- Assessment in 08 by peer review
- Reassignment exception extended to the 08 disciplines
- ‘Ranked’ outlet lists were not used
- ‘Structured’ report form for peer reviewers with specified quality criteria

ERA 2012 Research Outputs by Type



ERA 2012 Peak Bodies Consultation

- Appropriate bibliometrics for ICT?
  - aim to treat conferences like journals
  - preferably find alternative to Scopus citation analysis
  - or move to peer review
- How to credit 'applied' ICT research published under other FoR codes
  - "maths" precedent in wide demand, and issue well-understood by ARC – should be extended to ICT disciplines
- Exactly how are the various measures of the discipline matrix combined to give an overall score
  - need for more transparent nomination of expert reviewers
- Exactly how is "world standard" determined
  - need for more transparency about how world standard is constructed and understood by the RECs

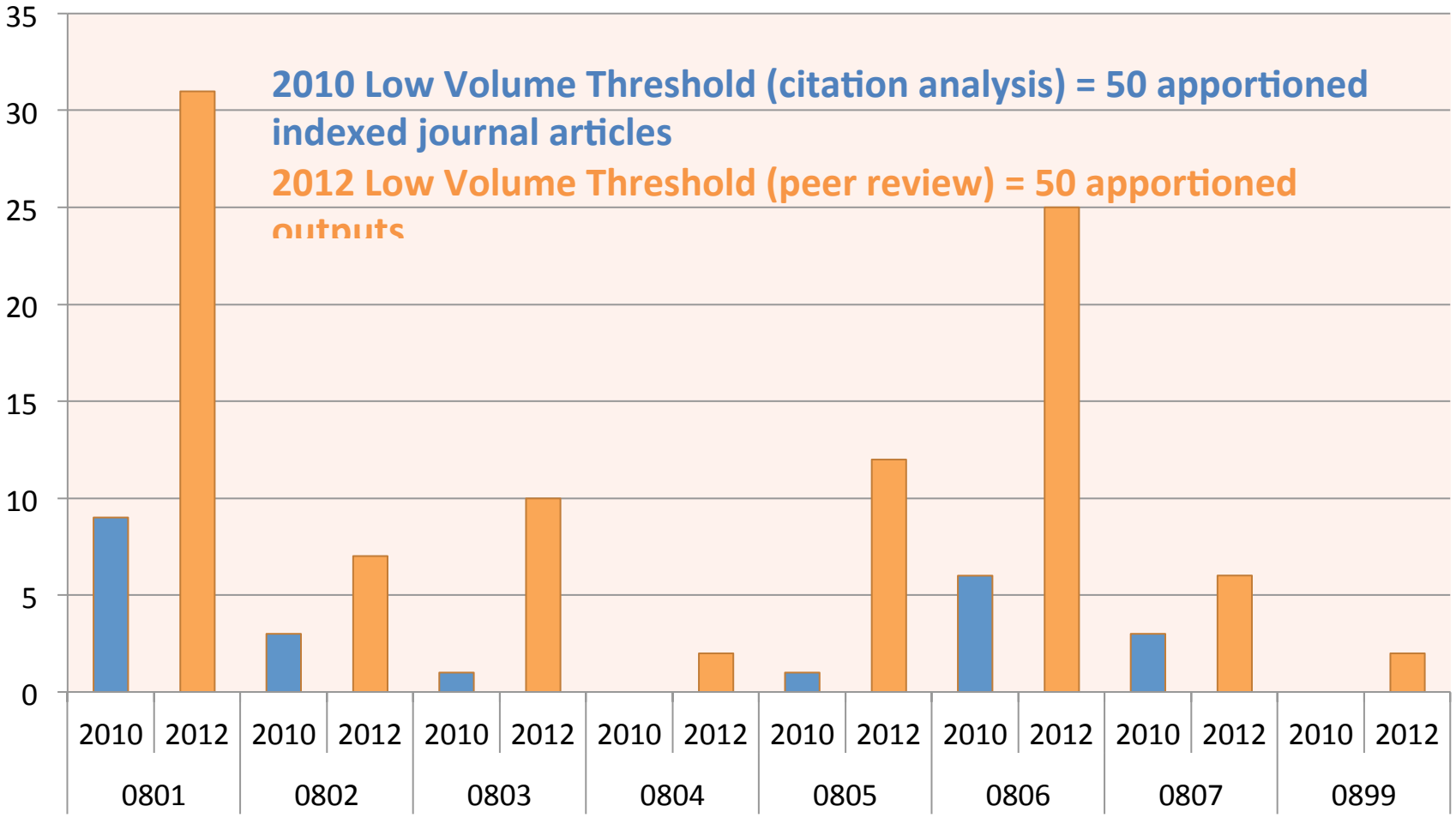
Peak Bodies Citation Project

- Proof of concept /pilot for conference citations via Google Scholar/Microsoft Academic:
  - does GS/MA have enough data for the ARC to generate a robust benchmark?
  - does GS/MA have sufficient coverage of the 08xx disciplines conferences?
  - are the GS/MA cites scholarly and able to be used for research evaluation?
- the outcome:
  - conference citations could be used to derive citation metrics but would need a combination of providers
  - peer review is accepted for ERA 2012 with the expectation that citation metrics will be used for all 08 outputs in future ERA rounds

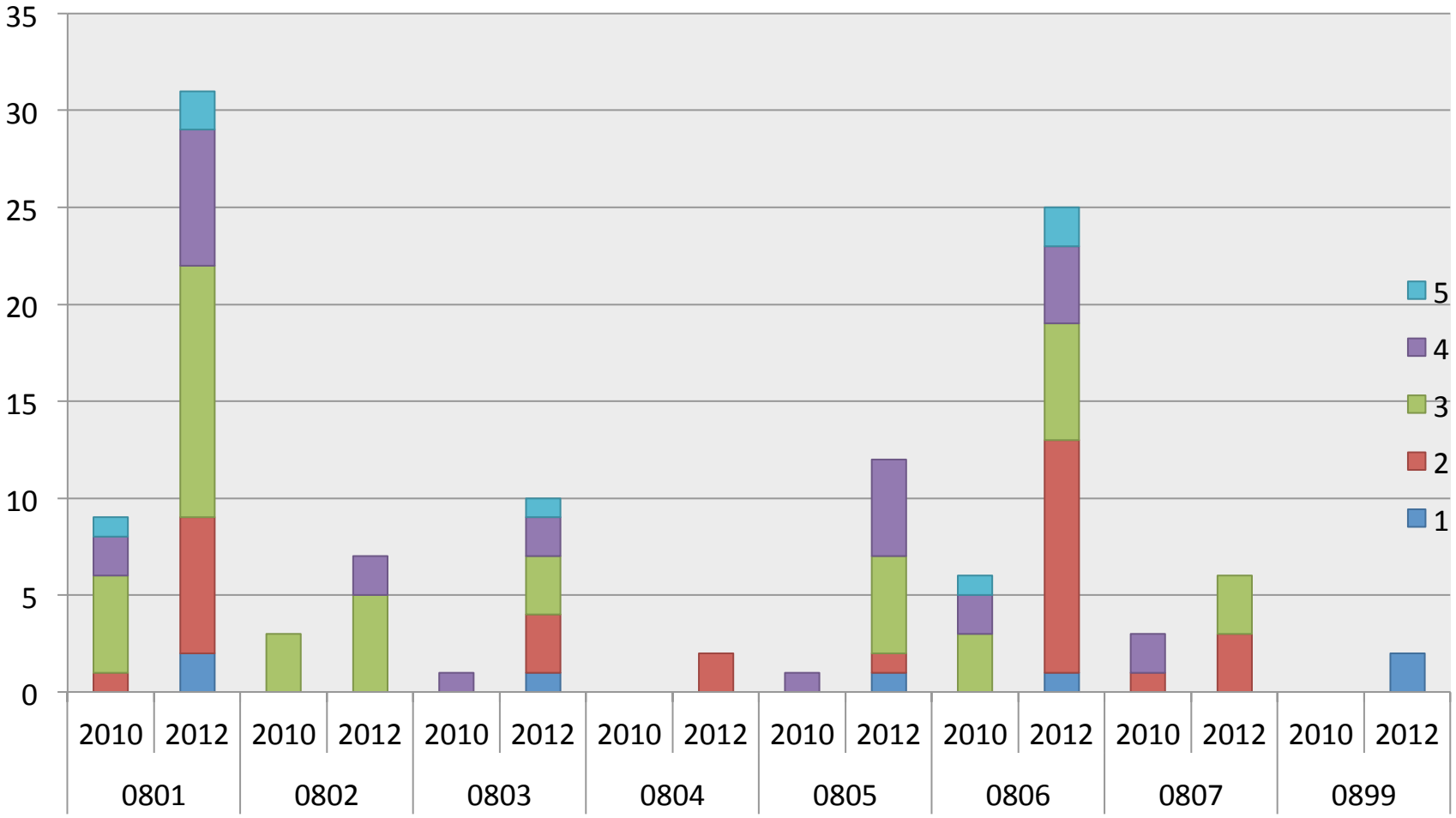
The premise of peer review…

- The quality of a research output or of the work of a group of scholars is most appropriately determined by a community of peers
- Relative quality – an informed value judgment made by a reviewer based on knowledge and expertise
    - *Selection strategy*
    - *Approach (Methodology; Appropriateness of outlet/ venue; Discipline specific publishing practices etc.*
    - *Contribution (Timeliness; Originality; Significance of the research question; Subsequent use by others; Contribution nationally and/or internationally etc.*
- Breadth of advice vs. standard application of criteria

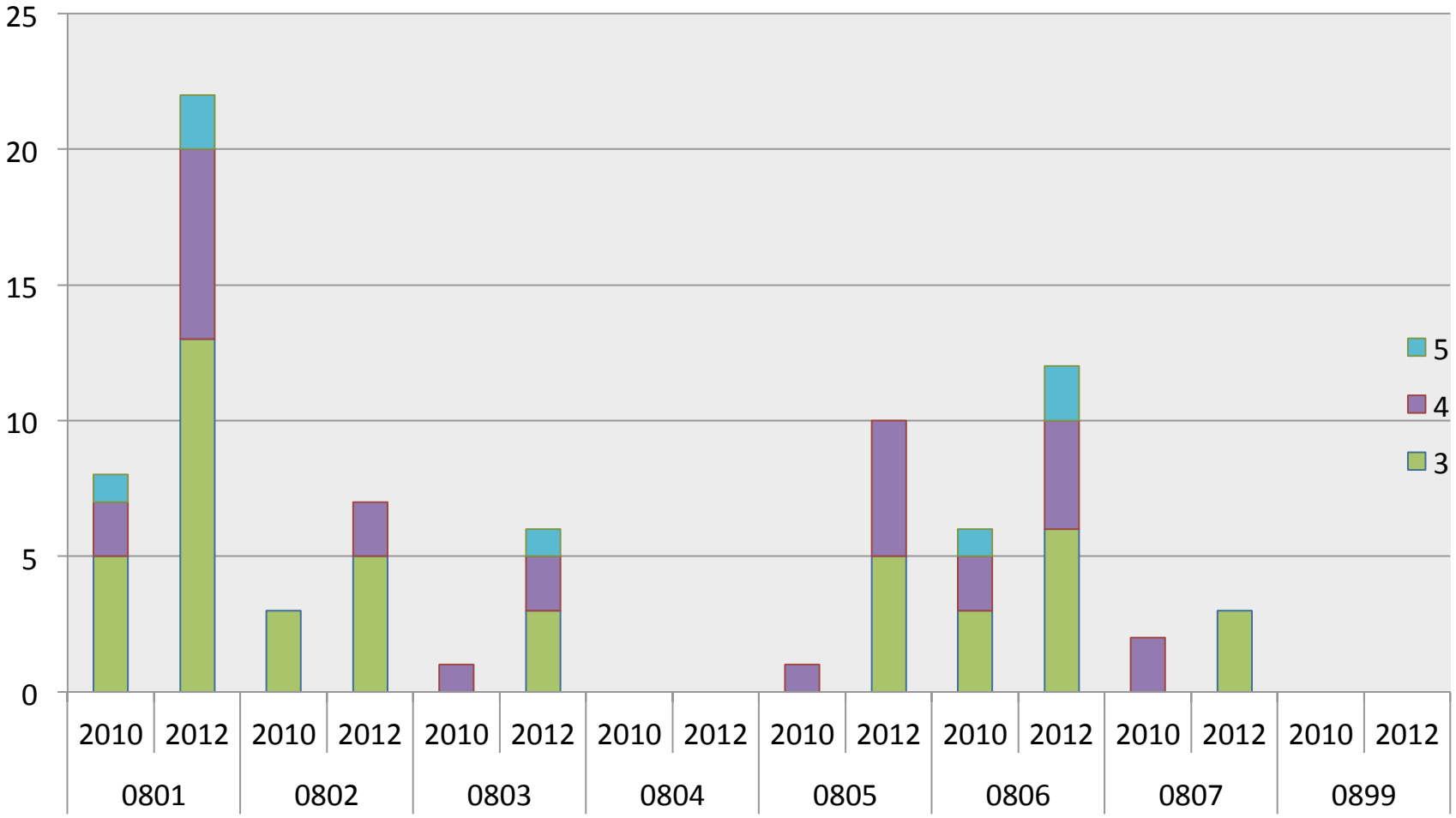
Assessed 4-Digit UoEs ERA 2010 vs 2012



4-Digit Ratings ERA 2010 vs 2012



4-Digit Ratings at World Standard and Higher
ERA 2010 vs 2012



Research Excellence Framework (2014) Update

- In the panel criteria document Sub-panel 11: Computer Science and Informatics indicated that in addition to the Scopus citation data provided by the REF team, Sub-panel 11 intended to make use of Google Scholar as a further source of citation information.
- "Following discussions with Google Scholar, it has not been possible to agree a suitable process for bulk access to their citation information, due to arrangements that Google Scholar have in place with publishers."
- Therefore Sub-panel 11 **will not be using Google Scholar** citation data to inform their assessment of outputs

Next Steps

- ERA public consultation (March/April 2013)
  - broad range of advice about the ERA approach
- Standardise conference names
  - Council of Australian University Librarians (CAUL)
- Citation metrics for conferences
  - Thomson Reuters and Scopus
- ERA 2015 **Discipline Matrix** consultation
- Further contributions from ICT peak bodies?

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arc.gov.au **info@arc.gov.au**