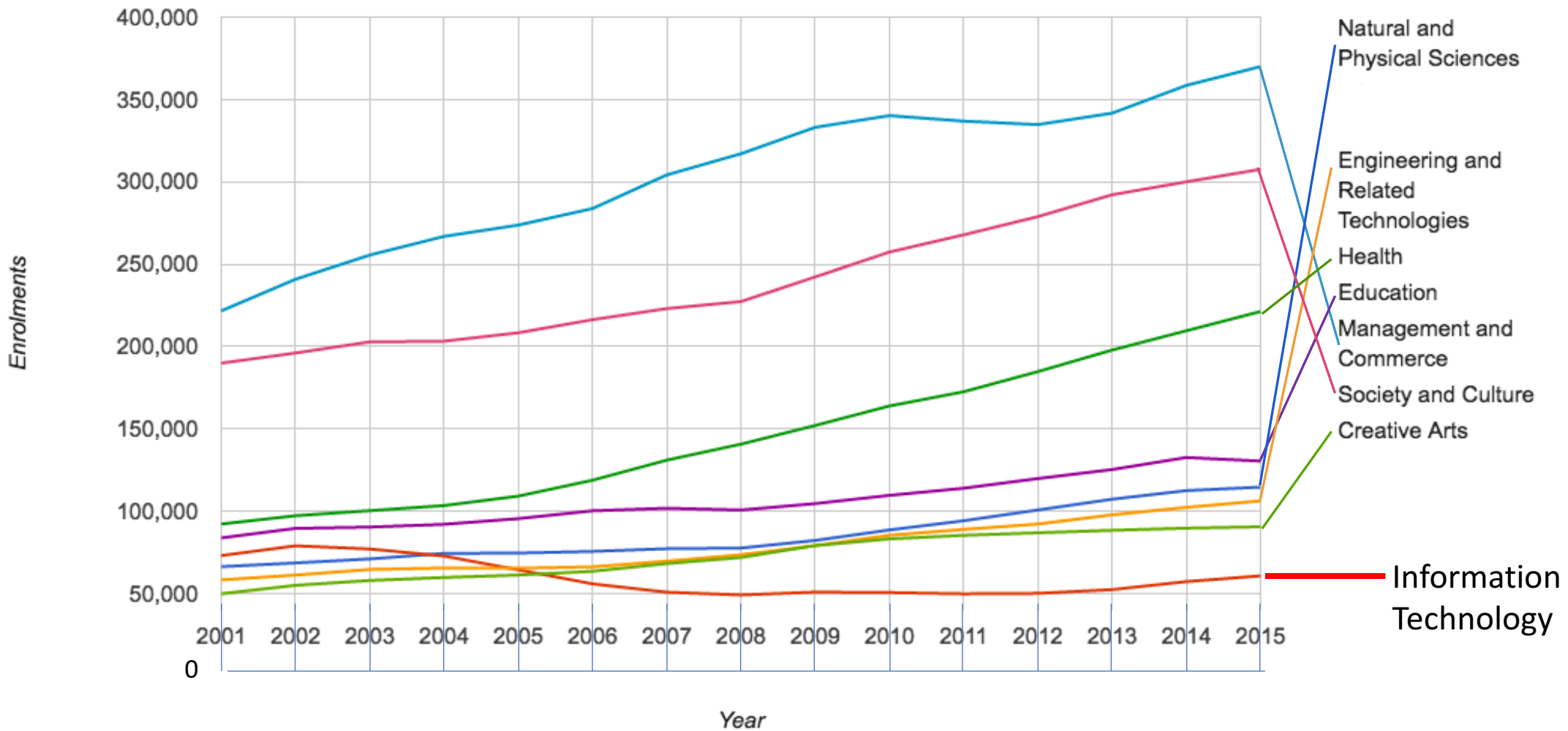# Scaling Up is Hard to Do

Quality education with rapidly increasing numbers

Chris Johnson
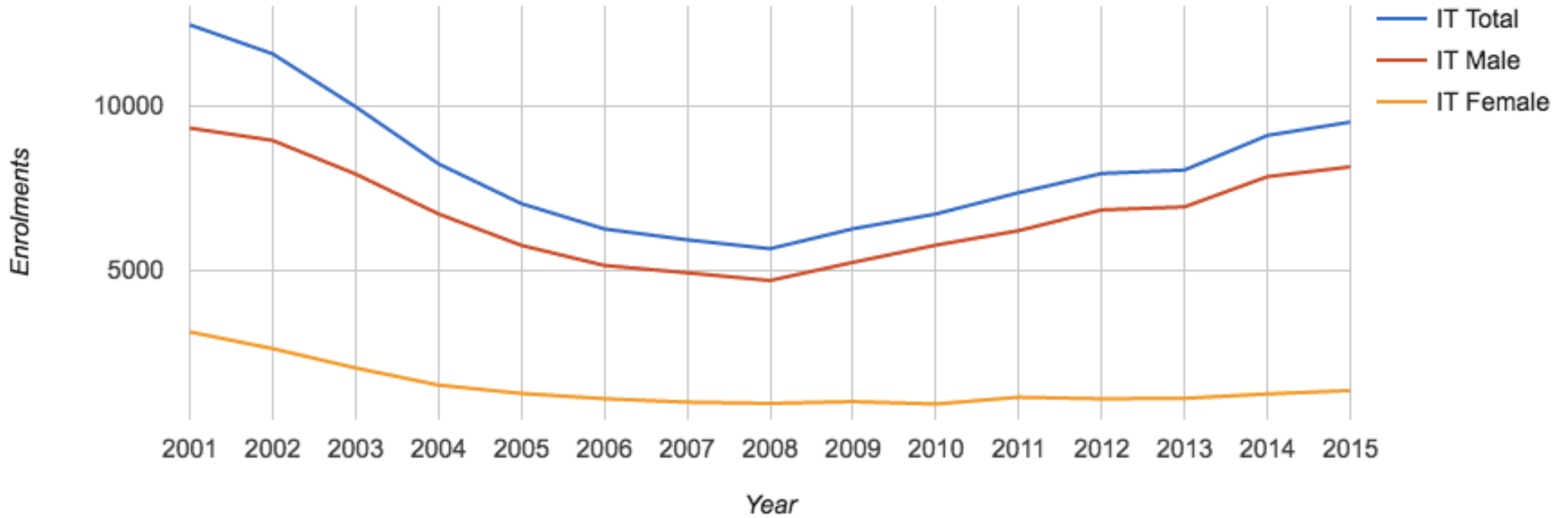
Executive Officer, ACDICT

Australian Higher Education Enrolments (uCube Data)

Legend:
- Natural and Physical Sciences
- Engineering and Related Technologies
- Health
- Education
- Management and Commerce
- Society and Culture
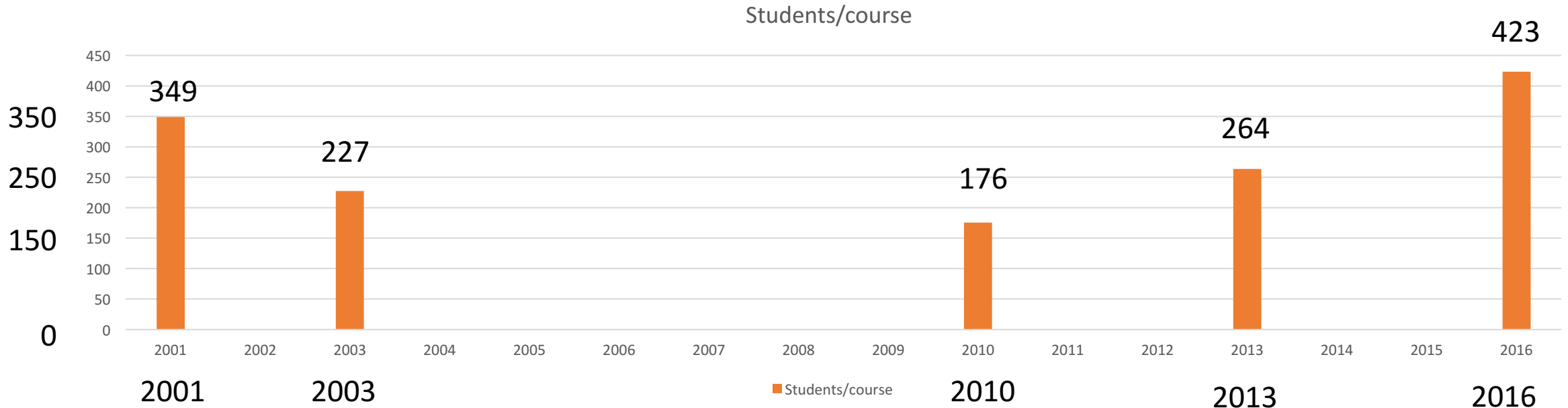- Creative Arts
- Information Technology

IT shows "relatively stable enrolments around 50,000 over the period 2007 to 2012, to just over 60,000 in 2015. (An increase of 23.52% from the lowest enrolment point in 2008)."

Falkner 2017, *A Look at IT and Engineering Enrolments in Australia – Updated!*

Commencing Domestic IT Enrolments

Falkner 2017, *A Look at IT and Engineering Enrolments in Australia – Updated!*

Class sizes in introductory programming Australasia 2001-2016

Mason and Simon 2017

Students/course

349   227   176   264   423

2001   2003   2010   2013   2016

"introductory programming" class sizes reported in survey across Australia & NZ.
Are increases confined to larger institutions, metro campuses?

Class Size 2016	<100	100-249	250-499	500-999	1000+
Count	8	11	15	6	8

When I were a new Head of Department…

- 1999-2000 dot com boom
  - the last time numbers of students increased so rapidly
  - staff numbers respond slowly, in funds and appointments
  - laboratory provision responded slowly, in total lab space and numbers of workstation seats
  - class sizes ballooned
- what are the driving issues – 18 years later?
- quality / quantity / efficiency / effectiveness
- expectations and student response: the "digital natives"

2005

Pope Benedict 2005

2006, 2007

iPhone 2007, Facebook (public) 2006

2013

Pope Francis 2013

Responses to increasing student demand (0)

- cap student numbers?
- increase number of lecturing staff?
- increase class sizes
- split classes
- increase use of online learning
- more tutors/demonstrators

Responses to increasing student demand (1)

- cap student numbers
  - freedom to do this is constrained by
    - political/management/society pressure
    - funding is demand driven, numbers bring revenue rewards
- increase number of lecturing staff?
- increase class sizes
- split classes
- increase use of online learning
- more tutors/demonstrators

Responses to increasing student demand (2)

- cap student numbers?
- increase number of lecturing staff
  - cost & lag in funding flow
  - slow response time to recruit, induct, train to meet demand
  - institutional policy/reluctance to appoint FT/tenured
  - available staff to recruit? increasing demand in USA
- increase class sizes
- split classes
- increase use of online learning
- more tutors/demonstrators

Responses to increasing student demand (3)

- cap student numbers
- increase number of lecturing staff?
- increase class sizes (the "natural" no-action response)
  - challenge/more work for academics to learn and implement different teaching methods
  - risk of lower quality of student experience (perceived or actual)
    - **risk loss of reputation, lower retention**
  - larger classrooms, timetabling and room availability challenges
  - **challenge to maintain and increase authentic, industry related assessment**
    - number and quality and cost of industry interactions are hard to scale
- split classes into smaller lecture groups
  - increase staff workload or staff numbers
  - more classroom sessions, timetabling
- increase use of online learning
- more tutors/demonstrators

Responses to increasing student demand (4)

- cap student numbers
- increase number of lecturing staff?
- increase class sizes (the "natural" no-response)
- split classes into smaller lecture groups
- increase use of online learning
  - more administration and interaction load
  - challenges
    - **authentic, industry related assessment**
    - depth of learning
    - mentored group work
    - risks less effective learning, employability, quality, retention
- more tutors/demonstrators

Responses to increasing student demand (5)

- cap student numbers

- increase number of lecturing staff?

- increase class sizes (the "natural" no-response)

- split classes into smaller lecture groups

- increase use of online learning

- more tutors/demonstrators
  - challenge to maintain and increase teaching quality
    - recruitment/retention
      - insufficient number of postgrad students
      - quality attributes for face to face teaching
    - training: high turnover of tutors (training is improving under TEQSA)
    - academic workload with increased numbers to manage in teaching operations
      - for consistency in teaching/helping/stimulating
      - moderating consistent assessment