

# What researchers want.....

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Research Information Network

Decoding the Digital  
27 July 2010

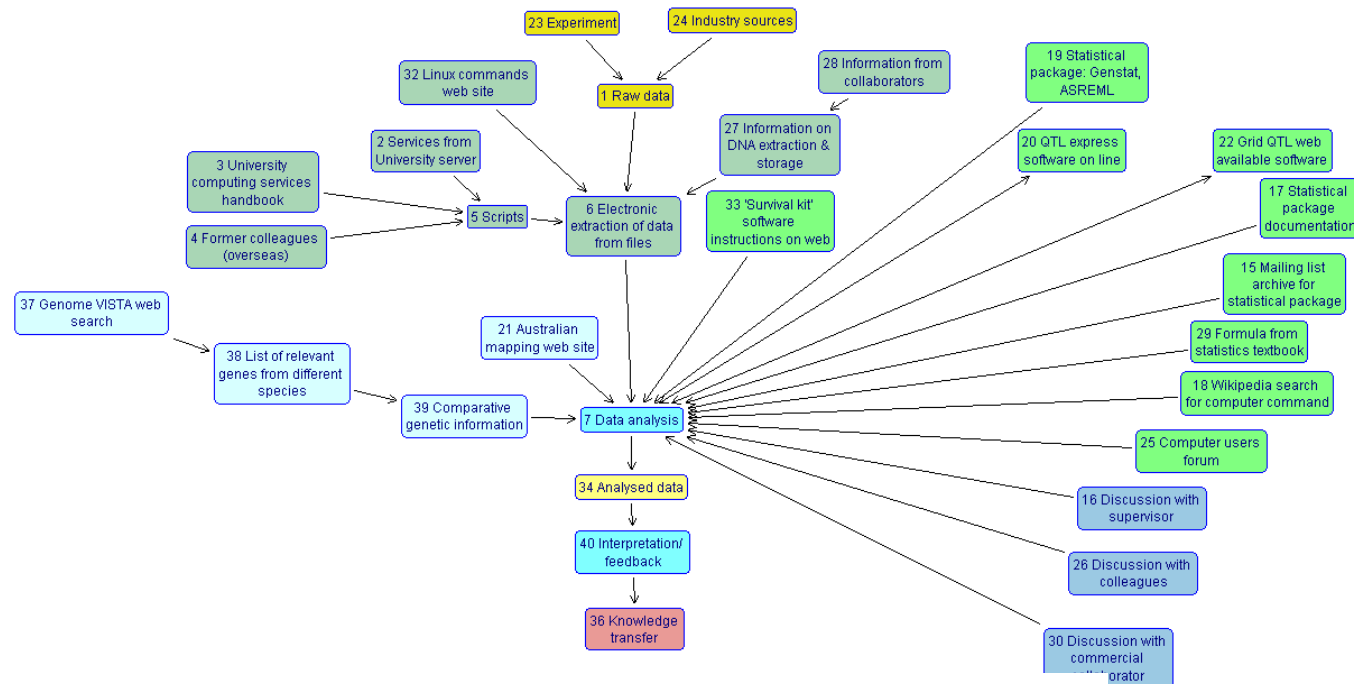
## Some propositions

- the volume of research undertaken worldwide has increased, is increasing, and will continue to increase
  - and more of it will be done collaboratively
- researchers are both producers and consumers of research outputs
  - but they don't necessarily share the same interests
- Governments invest in research because they believe it has a positive impact on society and the economy
  - and they want to maximise that impact
- the costs of research, and of higher education, have increased, are increasing (and ought to be diminished?)
  - cost-effectiveness an increasingly-dominant theme in current economic climate

## The Role of Information in Research: a crude model

- defining a set of research questions, issues or problems
- identifying relevant existing knowledge
- accessing, analysing, and evaluating existing knowledge and data
- designing a methodology for generating new knowledge
- applying the methodology and discovering new knowledge
- combining old and new knowledge to answer research questions and to enhance understanding
- disseminating the outcomes of research in a form that is both sustainable and retrievable

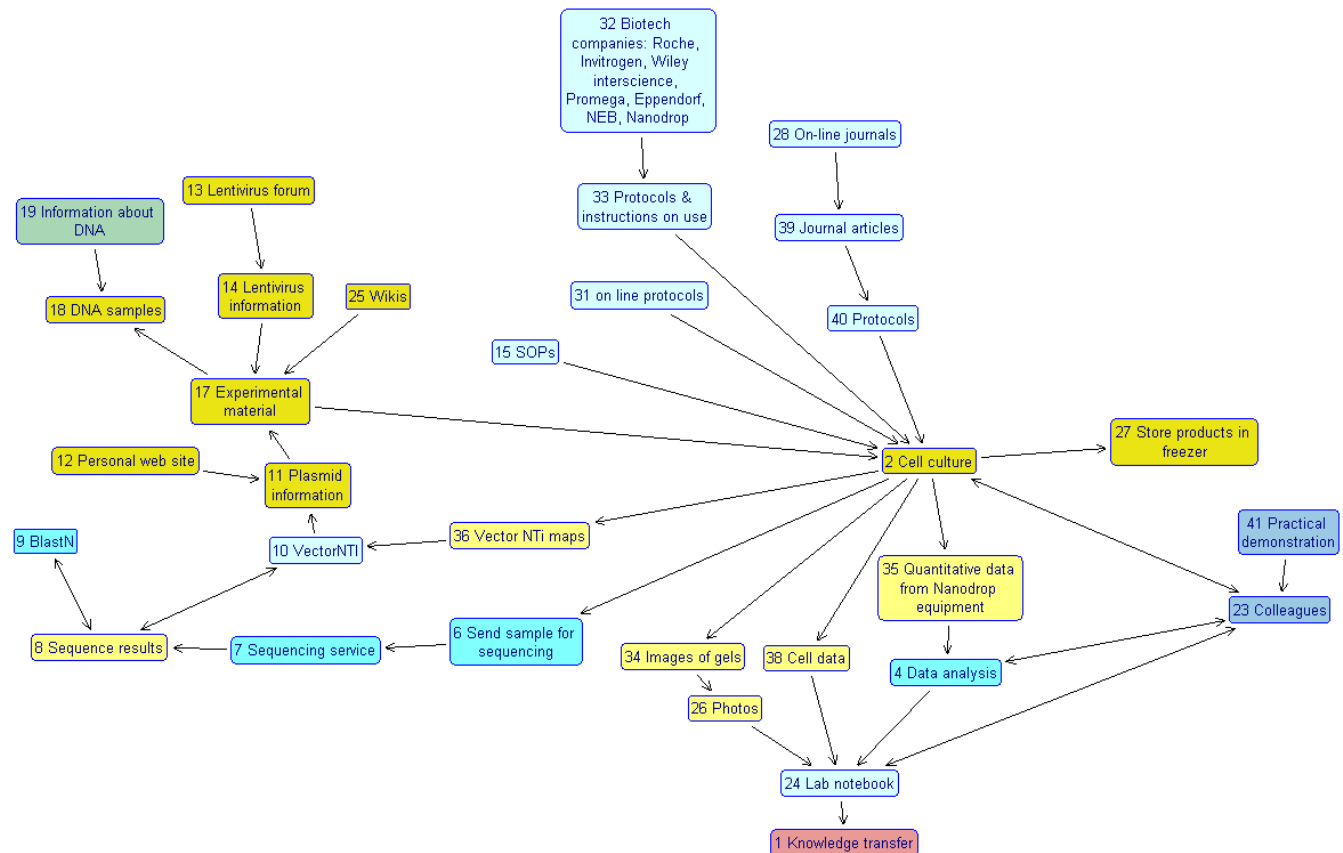
# The Research Process: Animal Genetics



Study concept & design   Data collection   Data processing   Data Access & dissemination   Data analysis

Curation tools   Informal interaction   Information discovery   Research results   Outcomes

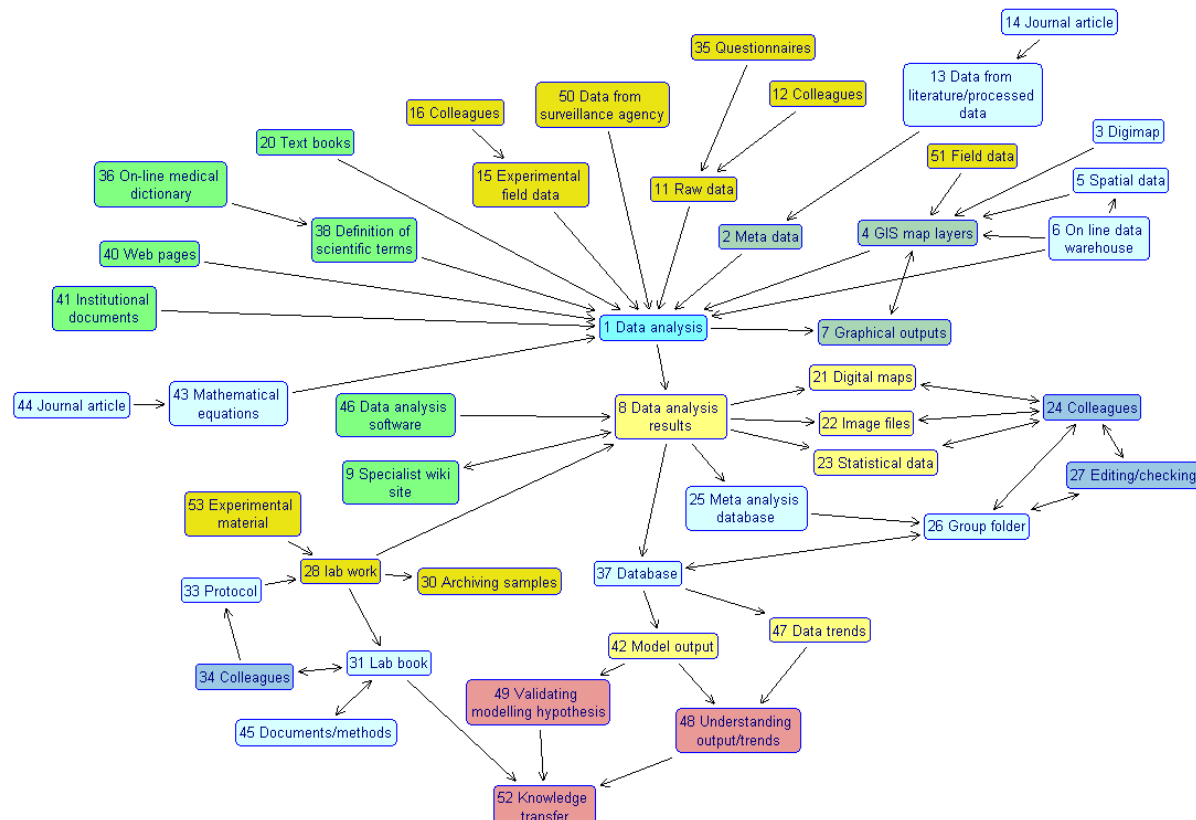
# The Research Process: Transgenesis and Embryology



Study concept & design   Data collection   Data processing   Data Access & dissemination   Data analysis

Curation tools   Informal interaction   Information discovery   Research results   Outcomes

# The Research Process: Epidemiology



Study concept & design Data collection Data processing Data Access & dissemination Data analysis

Curation tools Informal interaction Information discovery Research results Outcomes

# The Research Process

- differs even in apparently similar areas of work, and also between teams.....

# Composition of Research Groups

- big science vs small science
  - small teams typical in life and physical sciences
  - amorphous and overlapping associations with other teams
  - “primary research engagements tend to be local”
- divisions of expertise, labour and knowledge exchange
  - PI/leader, senior researchers/lecturers, associates, computational specialists, postdocs, PhDs, technicians.....
  - dangers of surveys that look at individual responses divorced from context



# Content: what do researchers want to find and use?

Research Resources	Yes	No
Journal articles	99.5%	0.5%
Chapters in multi-authored books	97.0%	3.0%
Organization's web sites	90.8%	9.2%
Expertise of individuals	90.1%	9.9%
Conference proceedings	85.8%	14.2%
Monographs	83.3%	16.7%
Datasets – published or unpublished	62.0%	38.0%
Original text sources, e.g. newspapers, historical records	61.5%	38.5%
Preprints	54.7%	45.3%
Non-text sources, e.g. images, audio, artifacts	47.0%	53.0%
Other	18.0%	82.0% <sup>9</sup>

## Content: user expectations and needs

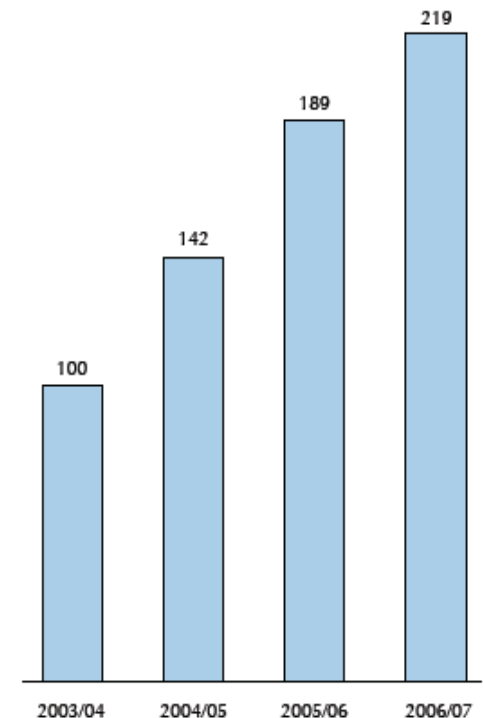
- published and non-“published”
  - grey literature, reports, working papers
  - data: raw or refined? mine or yours?
  - websites, blogs, wikis, emails
- quality-assured and non-“quality-assured”?
  - the good-enough source and/or version?
  - pre or post-publication peer review?
- digital and non-digital
  - perdurance of the book?
  - role of digitisation

# E-journals are used

- 98% of titles used in 10 institutions over 4 month period
- over HE sector as a whole, annual growth rate (CAGR) of 21.7%

The growth in article downloads  
n=67 UK universities

Source: Scopus 2008/COUNTER 2008



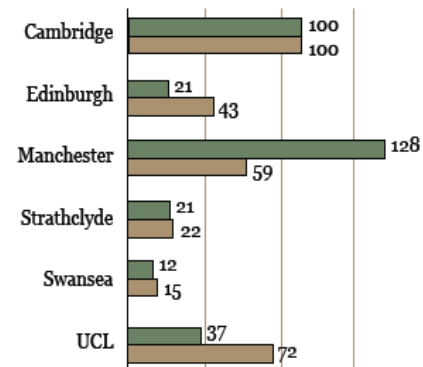
## Researchers in different disciplines behave differently

	Journal titles viewed	Most popular 5% of journals accounted for % use	Page views ( <i>average per session</i> )	Abstract views (% sessions)	Gateways (% page views arriving via gateways)
Chemistry	196	39.5	3.2	23.3	49.2
Environmental sciences	248	29.6	3.6	22.7	41.4
Economics	132	46.9	3.8	30.4	19
Life sciences	531	38.1	2.0	19.5	65.9
Physics	204	26.6	2.5	20.1	57.8

# But *per capita* usage varies

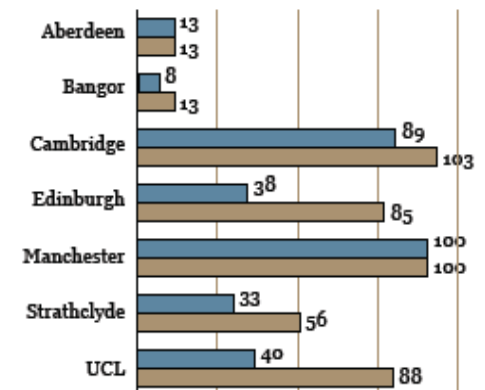
## Physics

Relative use  
Relative size



## Economics

Relative use  
Relative size



\*Not all institutions submitted all their research-active staff.

# Profile of journals varies too

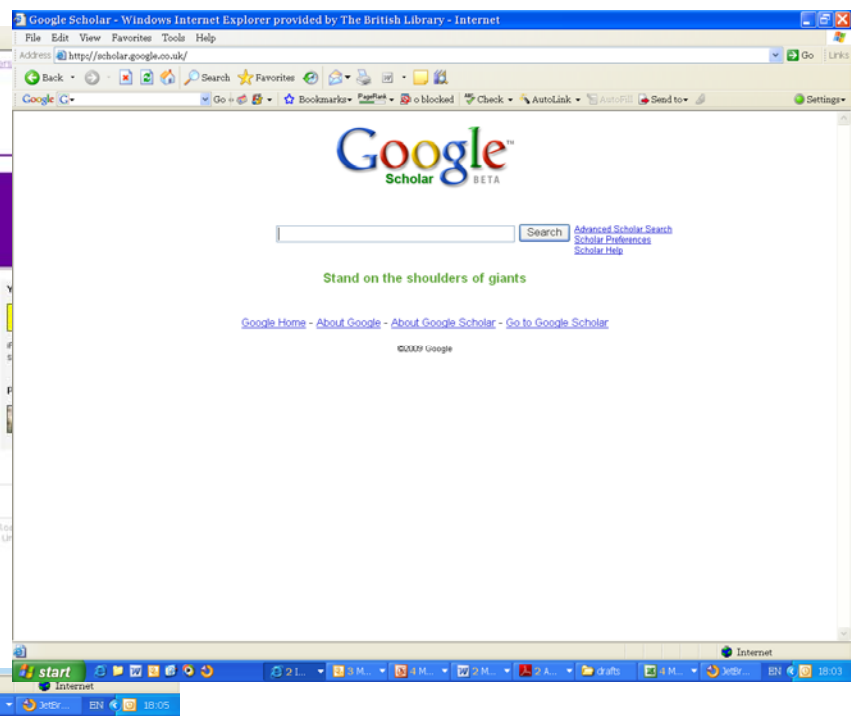
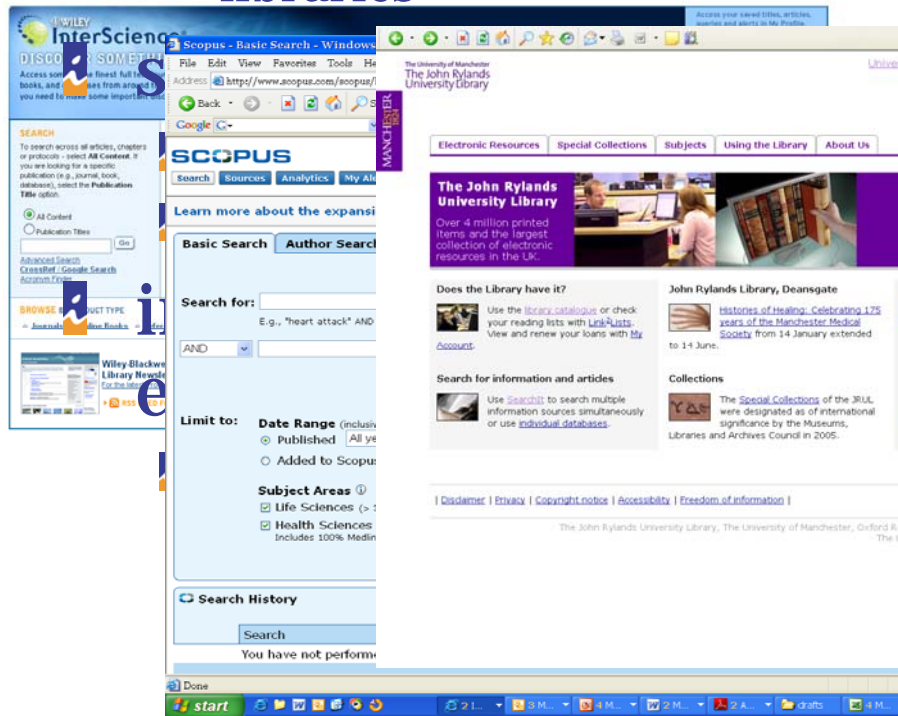
Case study	Average impact factor of journals viewed	Relative impact
Aberdeen	3.0	1.2
Bangor	2.3	0.9
Cambridge	5.0	2.0
Centre for Ecology and Hyrology	2.6	1.0
Edinburgh	3.7	1.5
Manchester	3.9	1.6
Rothamsted	2.6	1.0
Strathclyde	2.7	1.1
Swansea	2.5	1.0
UCL	4.1	1.7

# Services: user expectations and needs

- researchers as creators
  - quality assurance and enhancement
  - distribution and marketing
- researchers and others as consumers
  - quality assurance
  - search and navigation services
  - access, 24x7 and permanent
  - links and interoperability
  - text mining (published text as data)
- funders and research institutions
  - assessment and evaluation services

# Services: usability and sustainability

- search, navigation and access
- invigorating competition or wasteful duplication?
- levels of usage of services provided by publishers and libraries

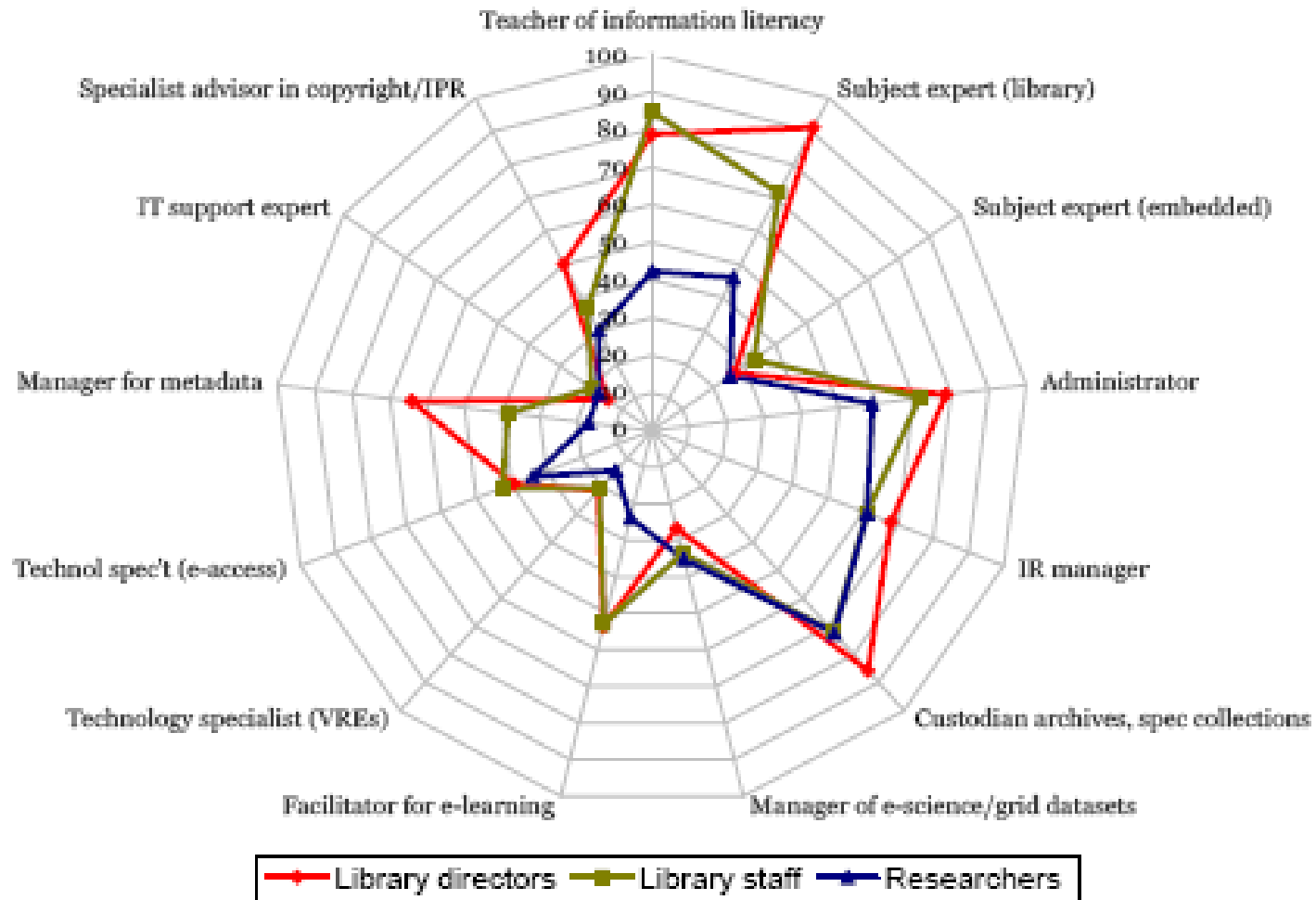




## Skills, expertise and competences: user expectations and needs

- specialist research skills and specialist information skills
- what's easy, and what's not
  - and how that changes
- 'information literacy' approaches and their limitations
- need for enhanced information professional skills in some areas
  - eg management and communication skills; bibliometrics

# Skills, expertise and competences:



# Some conclusions: users as creators and consumers

## Understanding e-journal investment, use and research outcomes

### Conclusions in summary

This diagram summarises the previous discussion and enables us to get more a sense of directionality.

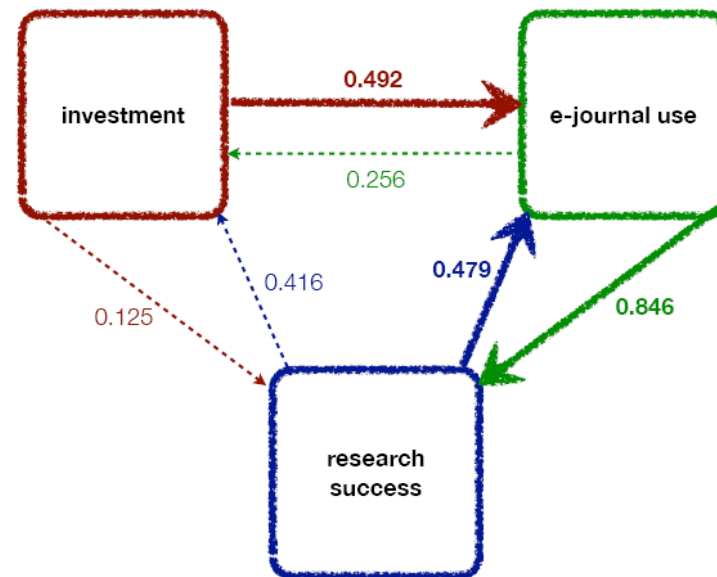
There appear to be three main drivers. The first is that investment drives use (actually it is a precondition for it). The reverse argument, that use drives library spending is weak, probably because of the bundled nature of journal purchasing.

Direct linkages between library investment and research success are weak, but then the two things being measured : a spending decision on journals and subsequent research performance metrics are a long way from one another in time as well as conceptually.

The summary model suggests a positive feedback loop between the use of e-journals and research outcomes. This is completely intuitive. The beauty of this model is that it shows that use is a strong predictor of research success and the biggest factor in the model by some distance.

### Limitations

*This is a small-scale study to explore the concepts behind path modelling to see if they could be used in studies of library return on investment. But it looks promising...*



# Questions?

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[www.rin.ac.uk](http://www.rin.ac.uk)