Driving Success

The role of management information in delivering a research strategy

Scott Rutherford
Director, Research and Enterprise, Queen’s University Belfast
Strategic context

Reducing government grant funding for teaching and research

Increasing concentration of government research funding

Rise of *interdisciplinary and international* grand challenge themes

Drive for increased *multi-partner/ industry-academic* consortia

Competition to *attract the best research leaders* globally

Relentless need to *demonstrate social and economic impact*
Reduced Government funding

Indicative funding to HEIs over the SR period
(real terms, excluding capital and additional funding)

- HEIF
- Outlay on student tuition fees loans
- Recurrent grant for Research
- Recurrent grant for Teaching

£ millions

- 2011-12
- 2012-13
- 2013-14
- 2014-15
Concentrated funding

UK Medical Research Council

£163.8m of £301.4m allocated to top 5 institutions (54.3%)
Responding to the challenge

• Single research groups, single institutions, or even single nations, do not have sufficient critical mass, expertise or resources to address these major societal questions, so collaboration is essential and expected; ‘size matters’

• Research projects are more multi-disciplinary, -partner, -institution and – national = added complexity and risk; competition for resources remains fierce

• Big challenge for universities to work coherently and make the whole > sum of the parts

• Must demonstrate how we add to the totality of activities rather than appear as disparate groups of individual research projects – very difficult to achieve

• Need to work in partnership with other universities, (regionally, nationally and internationally) much, much more
A strategic framework

Strategic Priorities

Cross-cutting themes
A structural framework

Research at Queen’s takes place in Core Disciplines, Pioneer Research Programmes and Global Research Institutes.

Our Global Research Institutes bring researchers from different disciplines together on a scale that enables them to address major societal challenges.

Excellent research conducted by researchers working in a range of core disciplines is the foundation for our research success, as demonstrated through the results of REF 2014.

Through Pioneer Research Programmes, we stimulate novel interdisciplinary research collaborations to tackle challenges emerging on the global horizon.
A challenge-led framework

Global Research Institutes

- The Institute for Health Sciences
- The Institute of Electronics, Communications and Information Technology
- The Institute for Global Food Security
- The Senator George J. Mitchell Institute for Global Peace, Security and Justice
A challenge-led framework

Pioneer Research Programmes

- Centre for Evidence and Social Innovation
- Sustainable Energy Research Centre
- Intelligent Autonomous Manufacturing Systems
- Risk and Inequality
- Centre for Advanced and Interdisciplinary Radiation Research
- Materials and Advanced Technologies for Healthcare
A performance framework

<table>
<thead>
<tr>
<th>CATEGORY</th>
<th>INDICATOR</th>
<th>CURRENT LEVEL</th>
<th>2020 TARGET</th>
</tr>
</thead>
<tbody>
<tr>
<td>Outputs</td>
<td>1. Percentage of outputs in top 10% of journals, as measured by SNIP</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>2. Average citations per paper</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>3. Percentage of outputs in top 10% of cited papers in their fields</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>4. Percentage of world-leading (4*) research outputs in next REF</td>
<td>T</td>
<td></td>
</tr>
<tr>
<td>Income</td>
<td>5. Percentage of income from RCUK and EU government bodies</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>6. Awards over £500k annually</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>7. Percentage of staff holding an international (non-EU) grant</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>8. Percentage Cost Recovery from research grants and contracts</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Environment</td>
<td>9. Number of ERC fellowships</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>10. Number of academic staff recognised through key measures of esteem</td>
<td>Ir</td>
<td></td>
</tr>
<tr>
<td></td>
<td>11. Percentage of publications with international collaborators</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>12. FTE PGRs enrolled per academic FTE</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>13. Ratio of DEL/non DEL-funded PGR students</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>14. Percentage rate of staff return to next REF</td>
<td>T</td>
<td>\</td>
</tr>
<tr>
<td></td>
<td>15. Percentage of environment measured as world-leading (4*) in next REF</td>
<td>T</td>
<td>\</td>
</tr>
<tr>
<td>Impact*</td>
<td>16. Percentage of impact measured as world-leading (4*) in next REF</td>
<td>T</td>
<td>\</td>
</tr>
</tbody>
</table>
How can Research Information Help?

- Create a clear evidence base to work from
- Help understand strengths and shape strategy
- Assist in finding opportunities, collaborators, talent etc
- Begin to benchmark performance meaningfully
- Really monitor progress against strategic objectives

But (generally)…

- Current systems used by universities are not fit for purpose
- They lack effective project management structures
- Universities are poor at delivering major projects
- There is a lack of quality products available to the sector
Making it happen…

Initiatives at Queen’s University Belfast:

**Strand 1:** to aggregate holistic research data from disparate sources (PURE SYSTEM)

**Strand 2:** to drive action across research leaders in managing the research portfolio (GRANTS SCORECARD)

**Strand 3:** to understand citation performance and collaborative performance (PUBLICATION IMPACT PLANS)
Strand 1

To aggregate holistic research data from disparate sources

(PURE SYSTEM)
Aggregating key research data

3,000 Researchers
3,000 PG Students
4,200 Applications
3,000 Awards
60,000 Outputs
1,250 Activities
Pure Profile – Engaging Academic Staff

---

James McElnay
Professor
Direct phone: 5221
j.mcelnay@qub.ac.uk

Pro-Vice-Chancellor (Research and Postgraduates), School of Pharmacy, 23/04/12 – present
Pro-Vice-Chancellor (Research and Postgraduates), Pharmaceutical Science and Practice, 23/04/12 – present
Pro-Vice-Chancellor (Research and Postgraduates), UOA3 – Allied Health Professions, Dentistry, Nursing and Pharmacy.
23/04/12 – present

My portal profile

Research output

- Multi-hospital outbreak of Clostridium difficile ribotype 027 infection: epidemiology and analysis of control measures
  Research output: Contribution to journal – Article

- Healthcare professional experiences and attitudes on unlicensed/off-label paediatric prescribing and paediatric clinical trials
  Research output: Contribution to journal – Article

- Metronidazole Population Pharmacokinetics in Preterm Neonates Using Dried Blood Spot Sampling
  Research output: Contribution to journal – Article

- Clinical and economic impact of contaminated blood cultures within the hospital setting

Projects £10

- Use of dried blood spots – Arthritis Research UK Ref 19421
  McElnay, J. & Hawa, A.
  1/08/08 – 31/12/09
  £80,000. Arthritis Research UK (Arthritis Research Campaign) (R270)
  Project: Funded Project - Research

- HEA UNIV OF NEWCASTLE UPON TYNE – 523
  Collier, P. & McElnay, J.
  1/08/08 – 31/12/09
  £60,000. Northern Pharmacies Ltd Trust Fund (R299)
  Project: Funded Project - Research

- CONNECTED HEALTH
  McElnay, J.
  1/08/08 – 31/12/09
  £60,000. Northern Pharmacies Ltd Trust Fund (R299)
  Project: Funded Project - Research

- DEVELOPMENT OF RESEARCH LINKS WITH THE UNIVERSITY OF ALBERTA
  McElnay, J.
  22/05/09 – 31/07/09
  £10,000. The University of Alberta
  Project: Funded Project - Research
Research Portal: External Profiles

**Professor Christopher Hardacre**
- School of Chemistry and Chemical Engineering, Host of School
- Centre for the Theory and Application of Catalysis (CeTACat)
- C.Hardacre@ouc.ac.uk
- Phone: +44 (0)28 9097 4592

For media contact email comm.office@ouc.ac.uk or call +44(0)2890 973061.

**Publications**
- Critical role of water in the direct oxidation of CO and hydrocarbons in diesel exhaust after treatment catalysts
  - Research output: Contribution to journal / Article
- Critical role of water in the direct oxidation of CO and hydrocarbons in diesel exhaust after treatment catalysts
  - Research output: Contribution to journal / Article
- Aqueous phase reforming of n-heptane over Pt-Re bimetallic catalyst: Effect of the Re addition
  - Research output: Contribution to journal / Article

**Projects**
- Practical Lithium Air Batteries
  - Project: Funded Project / Research
- Using Neutrons to Understand Liquid Phase Heterogeneous Catalysis
  - Project: Funded Project / Research
- CCU Programme Grant
  - Project: Funded Project / Research

**Frequent Publishers**
- RSC Green Chemistry Series
- Publisher
- ECS
- Publisher
- Taylor and Francis
- Publisher
Internal Profile: Head of Department

- Your Academic Staff
- Their Associated Publications
- Their PG Research Student Supervision
- Their Awarded Grant Funding
Balanced Metrics Reporting Suite
Strand 2

To drive action across research leaders in managing the research portfolio

(Grants Scorecard)
Managing at corporate level

1(a) Value of awards and research income (£m), 2012/13-2016/17 (end June) and forward targets

1(b) No of research awards at set thresholds (%), 2012/13-2016/17 (end June)

1(c) Value of research awards at set thresholds (%), 2012/13-2016/17 (end June)

1(d) Contribution trend on core research grants and contracts (2010/11 – 2016/17)
Managing at Faculty level

2(a) Value of applications (£m) 2016/17 (Aug-end June) set against 3 year average (Aug-end June) and 12 mth (Aug–July) 3 year average

- Medicine, Health & Life Sciences
- Engineering & Physical Sciences
- Arts, Humanities & Social Sciences

3 year average (Aug-end of June) ▇ 2016/17 (Aug-end of June) ▇ 3 year average (12 mths)

2(b) Value of awards (£m) 2016/17 (Aug-end June) set against 3 year average (Aug-end June) and 12 mth (Aug–July) 3 year average

- Medicine, Health & Life Sciences
- Engineering & Physical Sciences
- Arts, Humanities & Social Sciences

3 year average (Aug-end of June) ▇ 2016/17 (Aug-end of June) ▇ 3 year average (12 mths)

2(c) Percentage of awards above Faculty threshold, AHSS (£50k), EPS (£200k) and MHLS (£250k), in current year against 3 year average

- AHSS
- EPS
- MHLS

3 yr ave ▇ 2016/17 (end June)

2(d) Value of research income (£m) 2016/17 (Aug-end June) set against 3 year average (Aug-end June) and final year target

- Medicine, Health & Life Sciences
- Engineering & Physical Sciences
- Arts, Humanities & Social Sciences

3 year average (Aug-end of June) ▇ 2016/17 (Aug-end of June) ▇ 2016/17 target
Managing at School/Dept. level

4(a) Value of applications (£m) 2016/17 (Aug-end June) by School set against 3 year average (Aug-end June) and 12 mth (Aug–July) 3 year average

4 (b) Value of awards (£m) 2016/17 (Aug-end June) by School set against 3 year average (Aug-end June) and 12 mth (Aug–July) 3 year average

4 (c) Value of research awards at different thresholds (%), EPS, 2013/14-2016/17 (end June)

4(d) Value of research income (£m) 2016/17 (Aug-end June) by School set against 3 year average (Aug-end June) and final year target
Delving deeper
Strand 3

To understand citation performance and collaborative performance

(PUBLICATION IMPACT PLANS)
Driving publication impact

• Pilot collaboration for three years with supplier
• Raising awareness of citations
• Exploring links between citations and league tables
• Focused ‘deep dive’ sessions with three Departments.
• Heavy emphasis on benchmarking against peers
Initial findings

• Queen’s had a lower publication output and citation impact compared to peer universities (ave cites per paper)

• International collaboration generally increases citation impact – Queen’s performed well, relative to peers, but still a strong concentration with locally based institutions.

• Academic-Corporate Collaboration generally increases citation impact – but Queen’s had a lower level of collaboration than peers

• Review and multidisciplinary journals tended to rank higher in citations than original research journals

• Queen’s had a lower proportion of publications in the top quartile of journals than peer universities
International Co-authorship

<table>
<thead>
<tr>
<th>Institution</th>
<th>No of co-authored publications</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Ulster</td>
<td></td>
</tr>
<tr>
<td>University of Oxford</td>
<td></td>
</tr>
<tr>
<td>University College Dublin</td>
<td></td>
</tr>
<tr>
<td>UCL</td>
<td></td>
</tr>
<tr>
<td>Trinity College Dublin</td>
<td></td>
</tr>
<tr>
<td>Agri-Food and Biosciences...</td>
<td></td>
</tr>
<tr>
<td>University of Cambridge</td>
<td></td>
</tr>
<tr>
<td>Imperial College London</td>
<td></td>
</tr>
<tr>
<td>University of Leicester</td>
<td></td>
</tr>
<tr>
<td>University of St Andrews</td>
<td></td>
</tr>
<tr>
<td>Rutherford Appleton...</td>
<td></td>
</tr>
<tr>
<td>University of Manchester</td>
<td></td>
</tr>
<tr>
<td>University of Edinburgh</td>
<td></td>
</tr>
<tr>
<td>University of Strathclyde</td>
<td></td>
</tr>
<tr>
<td>Cardiff University</td>
<td></td>
</tr>
<tr>
<td>University of Leeds</td>
<td></td>
</tr>
<tr>
<td>King's College London</td>
<td></td>
</tr>
<tr>
<td>The University of Warwick</td>
<td></td>
</tr>
<tr>
<td>University College Cork</td>
<td></td>
</tr>
<tr>
<td>University of Birmingham</td>
<td></td>
</tr>
</tbody>
</table>
Journal quality
Academic led – A Departmental pilot
Driving action…

- Developed targeted ‘Publication Impact Plans’
- Aiming for upper centile journals
- Mentoring plans for early career researchers
- Appraisal-linked targets and evaluation
- International ‘placement’ schemes to foster broader collaborations
Changes in co-authorship

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Ulster</td>
<td></td>
<td></td>
<td>UCL</td>
</tr>
<tr>
<td>Oxford</td>
<td></td>
<td></td>
<td>Ulster</td>
</tr>
<tr>
<td>Rutherford App</td>
<td></td>
<td></td>
<td>Oxford</td>
</tr>
<tr>
<td>Imperial</td>
<td></td>
<td></td>
<td>Cambridge</td>
</tr>
<tr>
<td>AFBI</td>
<td></td>
<td></td>
<td>UCL</td>
</tr>
<tr>
<td>UCL</td>
<td></td>
<td></td>
<td>UCD</td>
</tr>
<tr>
<td>UCD</td>
<td></td>
<td></td>
<td>TCD</td>
</tr>
<tr>
<td>Cambridge</td>
<td></td>
<td></td>
<td>Imperial</td>
</tr>
<tr>
<td>TCD</td>
<td></td>
<td></td>
<td>Edinburgh</td>
</tr>
<tr>
<td>Manchester</td>
<td></td>
<td></td>
<td>Harvard</td>
</tr>
<tr>
<td></td>
<td>0-100</td>
<td>0-100</td>
<td>0-100</td>
</tr>
<tr>
<td></td>
<td>100-200</td>
<td>100-200</td>
<td>100-200</td>
</tr>
<tr>
<td></td>
<td>200-300</td>
<td>200-300</td>
<td>200-300</td>
</tr>
<tr>
<td></td>
<td>300+</td>
<td>300+</td>
<td>300+</td>
</tr>
</tbody>
</table>

Legend: No of co-authored publications
Clear quality improvements

<table>
<thead>
<tr>
<th>Institution</th>
<th>No of co-authored publications</th>
<th>FWCI</th>
</tr>
</thead>
<tbody>
<tr>
<td>University College London</td>
<td>283</td>
<td>6.32</td>
</tr>
<tr>
<td>Ulster University</td>
<td>266</td>
<td>0.94</td>
</tr>
<tr>
<td>University of Oxford</td>
<td>245</td>
<td>8.65</td>
</tr>
<tr>
<td>University of Cambridge</td>
<td>216</td>
<td>5.87</td>
</tr>
<tr>
<td>University College Dublin</td>
<td>209</td>
<td>2.78</td>
</tr>
<tr>
<td>Trinity College Dublin</td>
<td>204</td>
<td>3.15</td>
</tr>
<tr>
<td>Imperial College London</td>
<td>188</td>
<td>5.27</td>
</tr>
<tr>
<td>University of Edinburgh</td>
<td>164</td>
<td>6.14</td>
</tr>
<tr>
<td>Harvard University</td>
<td>153</td>
<td>7.77</td>
</tr>
</tbody>
</table>
International co-authorship critical
Significant benchmarked progress
Key messages

- Publication and citation metrics take time to improve
- Involve credible experts – suppliers, RMA professionals
- Critical to involve academics from the outset
- Do not avoid disciplinary differences (e.g. Arts & Humanities)
- Pick pilot areas to build understanding/ illustrate relevance
- Focus on action-planning at local level – and monitor regularly