# Final Project Report



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# EXECUTIVE SUMMARY

The DESCRIBE project was funded by Jisc to investigate the definitions, evidence and systems for capturing the impacts and benefits of research. Its findings are based on: a literature review; semi-structured interviews; an expert workshop; a series of detailed, thematic "think-pieces" from experts and commentators within the UK and internationally; and a final international project conference.

DESCRIBE explored the impact terrain within the EU and further afield taking in views of the strategic case for impact and highlighting conceptual frameworks that can be used to promote a shared understanding of what impact is and how it can be evidenced. It has given specific consideration to the implications of the agenda for skills, organisational structures and systems development which should inform national and international agendas in the short to medium term.

Following a period of rapid development since 2010, our findings suggest that the sector is at the "end of the beginning" in terms of its understanding of the blueprint for impact. Throughout this journey there has been robust consultation and engagement with a considerable range of disciplines, key reports and recommendations, as well as important developments outside of the UK. Whilst the key messages from DESCRIBE may therefore appear non-controversial to some, they signal an important consensus at this point in time:

- Impact should not be over-specified in the short to medium term (i.e. 1-3 years). Descriptions of impact need to draw upon a full colour palate of types and ranges, supported by both qualitative and quantitative evidence.

- There is no one-size fits all approach to assessing and evidencing impact which meets with universal approval, particularly at an international level and across disciplines.

- Systems-based approaches to considering some aspects of the wider influences of research, and indeed HEIs *per se*, are evolving and promise wider benefits for the sector so that it can articulate impacts made across a full range of activities, and not just research.

- Requirements for evidencing impact need to be proportionate to the size of the research budget and the benefits of capturing the information. This has implications for whether impacts are collected for every project or on a representative basis.

- There is an opportunity to employ data harvesting tools and embed IT systems to routinely capture information and evidence of research impact following international standards of semantic interoperability

DESCRIBE's key recommendations, which build on existing best practice, are addressed to three audiences: Research institutions, Research funders, and the enablers of research.

**A: Research institutions**
1. Senior Management and Senior Academics at both institutional and discipline level need to provide strong leadership in supporting cultural changes around the impact agenda. This involves communicating a clear message to staff the benefits of impact to both HEIs and the wider society. Ways in which academics can engage directly with, shape, and define the impact agenda as it unfolds nationally and internationally need to be explored.

2. Should consider how best to accommodate impact within internal structures, job descriptions, annual appraisal and promotional criteria, pay awards and professional development opportunities.
3. Need to take an early view on how they encourage and incentivise compliance with Funders' information gathering systems (such as Research Outcomes System or Researchfish) and how their local information management systems (where used) are configured to minimise the burden of capturing information on research impact. They should also reflect on who within the institution should upload this information into the systems and how to incentivise the input of high quality data.

**B: Research funders**
1. Should keep expectations for data capture under review and fully engage with users to ensure that the compliance burden for HEIs is reasonable and manageable and is proportionate to the benefits of collecting this information.
2. Should consider how their funding regimes for large scale research centres and grants incentivise researchers to seek and evidence impact and in particular, how researchers can best develop new skills for impact. The role of impact specialists and corresponding resources should also be considered.
3. Should retain an open definition of impact that incorporates all stages of the impact journey to ensure that a full range of impacts are considered. Attempts to over specify and define low-level categories of impact should be resisted over the short to medium-term.
4. Research impact information requirements should (i) attempt to give parity of esteem between naturalistic/qualitative and experimental/quantitative data collection methods; and (ii) retain case studies as the preferred approach to presenting evidence of impact in the short to medium term.
5. Should identify and disseminate best practice in what works in transforming research to impact along all stages of the impact journey, and across all disciplines and ensure that systems for assessing research impact recognise and respect differences in absorptive capacity, i.e. the ability to recognize the value of new information, assimilate it, and apply it, across disciplines and audiences.
6. Should maintain good communication with research institutions to ensure that opportunities for greater harmonisation between systems are realised.

**C: Research enablers**
1. The National Centre for Universities and Business should consider how it can: (i) communicate to business, commerce and the third sectors why impact is important to universities and research funders; and (ii) encourage businesses and policy makers to acknowledge and articulate the influence of academic research.
2. Should identify good practice in related fields (e.g. programme evaluation) that have potential to be transmitted to the research impact context and find ways to promote best practice and thereby support the professional capacity of the research impact community.
3. Should consider how they can best enhance the absorptive capacity of research users and beneficiaries across all disciplines and recipients.
4. Need to continue to provide 'thought-leadership' on how HEIs and funders can best respond to the skills implications of the impact agenda whilst ensuring that emerging best practice is identified and promoted to research institutions and funders.
5. Jisc should provide essential thought leadership on systems as the impact agenda matures and maintain a watching brief on the potential of emergent systems at an international level. It should lead thinking on semantic interoperability to capture evidence of impact.
6. Opportunities to engage the fledgling Higher Education Data and Information Improvement Programme (HEDIIP) in the streamlining of data and collection of information about impact should be explored.

# 1. INTRODUCTION

## Purpose of the DESCRIBE project

The DESCRIBE[1] project was a 12 month, Jisc-funded project that aimed to:

*"undertake a rigorous assessment of current standards relating to the evidence of impacts arising from research and make specific actionable and tangible recommendation for their future development in embedding a comprehensive more 'nuanced' understanding of impact and its evidence".*

Underpinning this broad aim were objectives articulating the scale, scope and focus of the project.[2] These involved exploring how research impact was currently understood by the higher education community and in particular, exploring what standards were guiding decisions about what impacts were sought, and the methodological approaches deployed in providing evidence of impact. The project sought to build on existing and concurrent projects on impact, in order to contribute to a "broader, comprehensive and pragmatic 'nuanced' understanding of impact" within the community.

More specifically, the project was charged with making specific and actionable recommendations:

- for ways in which current standards of research impact evidence can be strengthened, expanded and used consistently across the sector, whilst building on the HEFCE REF impact and evidence discourse; and

- how the technical infrastructure required for capturing, recording and analysing the full spectrum of research impact evidence.

## Engagement, management and co-ordination

The DESCRIBE project was led by the Research and Knowledge Management Division of the University of Exeter. An International Project Steering Group provided guidance, quality assurance of project processes and outputs and helped maximise stakeholder engagement. A full list of Project Steering Group members is included in Appendix A.

## Activities and Outputs

The project employed a triangulated research methodology combining primary and secondary data gathering techniques. This included:

- The production of a literature review titled the "Assessment, Evaluations and Definitions of Research Impact: A review". This was completed by the mid-point of the project in order to provide a sound conceptual understanding of impact. The review has been accepted by the OUP Journal *Research Evaluation* and will appear during the academic year 2013/14.

- Semi-structured interviews were carried out with more than thirty stakeholders including opinion formers from Higher Education Institutions, funding councils, central government departments and research bodies (see Appendix C for a more detailed account of this

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1 DESCRIBE stands for Definitions, Evidence and Structures to Capture Research Impact and Benefits.
2 The projects formal aims and objectives are expressed in the Jisc Project Plan (2012).

aspect of the project). Key insights from the interviews were used to refine how impact is conceptualised and to gauge external experiences and opinions about REF 2014. The DESCRIBE project was fortunate to access a select group of high-level research experts from across the United Kingdom and Europe with most interview respondents active in policy development in national as well as international contexts. This has acted to elevate the interview discourse to the level of a strategic and academic debate, and gives an overview of existing structures and frameworks to capture research impact.

- Hosting an expert workshop bringing together a specially selected panel of research impact practitioners and researchers drawn from academia, funding agencies and central government to debate the challenges and opportunities presented by the emerging impact agenda and more specifically, to identify practical recommendations for action. The expert workshop was held at the Wellcome Trust Conference in London on the 26th November 2012 and was attended by 28 invited delegates.

- Further to careful analysis, the commissioning of a series of detailed, thematic "think-pieces" from experts and commentators within the UK and internationally. These expert contributions set out the state of the art and future directions in key areas relating to impact as identified by the Project as well by responding to key changes in the landscape. The think-pieces underwent a process of editing and quality assurance and have been published as a separate output of the project. The topics and their authors are:

    1. *The Strategic Case for Impact*
       Professor David Cope, Director, Parliamentary Office of Science and Technology, 1998-2012, and Life Member, Clare Hall, University of Cambridge.

    2. *The impact of impact on Universities: skills, resources and organisational structures*
       Ian M Carter, Director of Research and Enterprise, University of Sussex, and Chair of the Association of Research Managers and Administrators (ARMA).

    3. *Impact Information Management Systems*
       Simon Waddington, Centre for e-Research, King's College London

    4. *Impact as a journey*
       Dr Averil Horton, Visiting Fellow, Brunel Business School, Brunel University

    5. *Making the Grade: Methodologies for assessing and evidencing research impact*
       Molly Morgan Jones and Jonathan Grant, RAND Europe

    6. *Assessing impacts of Higher Education Institutions*
       Professor Kaye Husbands Fealing, Centre for Science, Technology, and Environmental Policy, University of Minnesota

    7. *International contexts for impact*
       Anke Reinhardt, Director of the Information Management Group, German Research Foundation

- A final project conference, "The Future of Impact" to disseminate project findings and facilitate discussion about ways forward. The international conference was held on the

10<sup>th</sup> April 2013 at Woburn House, London. A copy of the conference programme is included in Appendix B.

Furthermore the project team maintained a close 'watching brief' on the impact agenda. This involved delivering presentations at "Occupy Impact" in Montreal (October 2012), the 2012 AURIL conference in Sheffield (October 2012) and "Making Data Count" in Berlin (April 2013) as well as engaging with existing and concurrent projects, events and key papers/reports, notable examples of which included:

- The European Science Foundation conference "A dialogue on evaluation" in Bonn.

- The Challenges of Impact Assessment report published by the European Science Foundation.

- Outputs from the "The Impact of Social Sciences" Project funded by the Higher Education Funding Council for England (HEFCE) and coordinated by the London School of Economics. The project aimed to demonstrate how academic research in the social sciences achieves public policy impacts, contributes to economic prosperity and informs public understanding of policy issues and economic and social changes.

- Final reports from the Jisc-funded "Embedding impact analysis in research using business and community engagement (BCE) practitioners" project.

## Structure of this report

This report synthesises the key messages arising from these inter-related work streams and identifies recommendations for policy and practice within the sector. The remainder of the report is arranged in six chapters:

- Chapter 2 explores the strategic context for impact within Higher Education;
- Chapter 3 presents emerging approaches to conceptualising and defining impact;
- Chapter 4 examines methodologies for evaluating impact;
- Chapter 5 explores skills, resources and organisational structures;
- Chapter 6 highlights recent developments and opportunities with respect to Information Management Systems and
- Chapter 7 draws together some conclusions and the project's recommendations.

## 2. THE STRATEGIC CASE FOR IMPACT

*"We measure research because we value it and want to communicate that value: we want to find it valuable." (Anonymous interviewee)*

### Introduction

The DESCRIBE project sought to provide a more nuanced understanding of impact and its evidence by exploring the drivers of impact at the sector and institution level. In particular it sought to answer the following:

- Why does the sector need a better understanding of impact? What is driving the agenda now, and potentially what might drive it in future?

- Why should universities think strategically about impact?

- What are the future directions for impact?

University research has clearly always had impact. Ideas and innovations germinated in universities benefit us all: whether we delight in a richer cultural understanding, wrestle with the latest 'smart' gadgetry or benefit from improvements in medicine and health care. The opportunity to make a difference to some sphere of public or private life is an important motivation for many if not most academics and researchers. In this respect, impact is as old as the universities themselves. What has emerged more recently, however, is an international interest in capturing and describing the externalities or 'spill over' impacts of academic research for the non-academic community, mainly to "legitimise investments in research and serve as instruments to advocate for funding" (ESF, 2012a).

The project found that Impact is somewhat of a 'Marmite' term (*i.e.* you love it or you hate it): while some academics view impact as an opportunity and recognise that "universities are not immune to what is happening outside" (DESCRIBE interviewee), others perceive a threat to academic freedom and core values and resent the perceived commercialisation of higher education research (Horton, 2013)[3]. Measuring impact is also subject to considerable conceptual and methodological challenges (explored in Chapter 4 of this report) and can be highly resource intensive. These considerations have prompted some to question whether the "evaluation of higher education activity is a worthwhile task" (Kelly and McNicoll, 2011), particularly when the balance between the costs and benefits of assessing impact are unclear (Martin, 2012).

### Why does the sector need a better understanding of impact?

These concerns notwithstanding, the drivers of impact appear strong and the agenda is therefore likely to remain within Higher Education discourse for some time to come. Our think-piece from RAND Europe (Jones and Grant, 2013) provides a useful introduction to the factors driving current interest in measuring research impact. We review them briefly here.

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[3] See also George Monbiot article in The Guardian
http://www.guardian.co.uk/commentisfree/2013/may/14/oxford-university-takes-shell-funding

## Advocacy

Information about the impact of university research is needed to make a strong case for further funding. At the DESCRIBE conference, Nicola Dandridge, the Chief Executive of Universities UK - a key University advocacy organisation responsible for lobbying government for continued funding in academic research identified the need for "consistent" and "coherent narratives about impact". She told the delegation that that there was "no room to be purist about it" given the current background of fiscal austerity and that it was "not that research should have a narrow utilitarian function but that economic value is already there." She explained that negotiations with central Government had been broadly favourable to date given the "grim" economic outlook. At an earlier LSE event Sir Adrian Smith (audio, LSE) reported that the Treasury appears to have accepted the arguments to date:

> "The simple message we kept hammering home [to the Treasury] is that it is very difficult to see what kind of successful economic and social future the UK could have, if it were not to do with knowledge: knowledge production; knowledge dissemination; knowledge exploitation; and if you buy into that, then universities and the UK research community are at the heart of the future of the UK. I think that argument has been pretty well won."

Fiscal austerity aside, Professor David Cope, the author of our think-piece on the Strategic Case for Impact observes that the nature of research as an absolute good means that there will always be a need for some mechanism that determines desired funding levels:

> "Perhaps because research is widely seen as an absolute good, the overall demand for research could be said to be limitless – or at least far greater than current resources, public and private – could sustain. There is a sense that the cut-off point, that is the marginal project that is NOT funded, lies some way away from a Pareto optimal position, so some form of allocation mechanism is required."

## Accountability

Accountability is related to advocacy and is based on the premise that:

> "Good governance dictates that the recipients of public funding should be able to account of their decision-making. In the context of research funding, this means that sound grant-making decisions are made in a transparent, merit-based way that lead to some public benefit or social impact beyond academia." (Jones and Grant, 2013)

In the UK since 2009 research councils ask applicants to "explore, from the outset, who could potentially benefit from their work in the longer term, and consider what could be done to increase the chances of their research reaching those beneficiaries" (RCUK, website)[4] by completing "Pathways to Impact" statements at the proposal stage. While the primary objective of this requirement is to embed impact within the early stages of the research process, the reporting of appropriate metrics through systems such as Researchfish and the Research Outcomes System (ROS) provides a mechanism through which accountability can occur.

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[4] http://www.rcuk.ac.uk/kei/impacts/Pages/expectationpolicies.aspx

## Allocation

The allocation of research funding based on non-academic impact is relatively new (Jones and Grant, 2013) with the UK entering unchartered territory:

> *"Among European countries, the United Kingdom is at the forefront of implementing a comprehensive "impact" agenda that not only seeks to capture impact but also allocates a share of the public research budget according to its definition of impact." (Reinhardt, 2013)*

Block funding for research in the UK is distributed by HEFCE through the Research Excellence Framework (REF) process. Quality Related (QR) funding allocations based on the REF 2014 results will, for the first time, be partially allocated on the basis of retrospective accounts of impact through the submission of case studies. The impact weighting for REF2014 is 20 per cent but is likely to rise to 25 per cent for the next REF submissions round (Jones and Grant, 2013). This raises a question of 'proportionality' in terms of how universities make their *internal* allocations of QR funding: should they allocate 20% of their recurrent QR grant to supporting Impact? And if so, how should they do that? Many universities will have invested heavily in preparations for Impact ahead of the REF 2014 census deadline as an article in the Times Higher revealed[5], but how should they continue that investment from 2014 onwards?

## Analysis

While much of the focus around the impact of academic research has centred on the use of impact information to inform accountability, assessment and advocacy, information about impact can also have formative uses, as the European Science Foundation (2012a) identifies:

> *"impact studies can strengthen returns to science and society by improving the instruments that are used to fund research. In this instance they may also provide a better understanding of transfer of scientific knowledge into practice. The improvements in instruments may be structural, i.e., improving the way funding schemes are constructed and how research environments interact with society, or improvements may also arise as the process of evaluation affects the individual behaviour of researchers and stakeholders, as they become more aware of how research affects society and vice versa. They can also be used to further discuss the question of the relationship between scientific excellence and research being beneficial to society."*

The use of impact data for improvement and knowledge generation purposes is further elaborated by Reinhardt (2013) in her think-piece for DESCRIBE

> *"One of the reasons why governments handle "impact" differently is that they pursue different policy agendas. For example, Germany and France aim to attract more international researchers and improve their countries' research excellence and visibility – something which the UK is arguably not in need of. On the other side, the UK lacks a strong business research sector and an industrial base which provides a "natural" absorption capacity of research results. It remains to be seen whether the*

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[5] "Bracing for impact may cost sector millions" 11th October 2012, Paul Jump *Times Higher Education* http://www.timeshighereducation.co.uk/421445.article (last accessed 23rd May 2013).

*"impact" agenda, which aims to shift all – including basic research – to application, can resolve this situation."*

The relative weakness of the UK in terms of the pull-through or absorption of research was also highlighted in a presentation by Sir Adrian Smith at the final conference of the LSE project:

*"In the UK, we are fantastic at research but much weaker at pulling research through into developments that can either lead to wealth or to health, or to other major social improvements."*

He explained how this perception has tempted the government to 'meddle' with structures and headings and had led to the introduction of the Technology Strategy Board to broker relationships between research and business. The use of intermediaries or knowledge brokers to mediate relationships or transmit knowledge between academics and research users is a recurrent topic within this study.

## Why should universities think strategically about impact?

Notwithstanding the current - and understandable preoccupation with REF2014 – several contributors to the DESCRIBE project felt that the impact agenda should not be led by what "funders are after" but should prompt universities to ask more fundamental questions about the purpose and value of what they do, and who they do it for. It was felt that this process would help universities identify and articulate their contribution to society, the economy and the environment and potentially give them more control over their destiny. These sentiments were echoed in Professor David Cope's think-piece submission on the strategic case for impact:

*"[…] UK academia is facing some considerable challenges currently, and it is an intriguing question whether the unfolding of the 'impact agenda' can contribute to overcoming at least some of these challenges. It seems to me that reflection on the aims and values of academia, examined through the lens of impact, would be extremely apposite at the moment. This should be not just in terms of individual research endeavours but at departmental, faculty and institution levels as well. In fact, efforts should go beyond individual academic institutions to the sector as a whole."*

DESCRIBE contributors also highlighted what they felt was a neglected motivation for evidencing impact: promotion of the institutions reputation and brand. This is partly about tactics and business development and in particular securing and maintaining lucrative and high profile university-business relationships but also about recruiting the best staff and students. Waddington (2013) reflected on the motivations prompting institutions to invest in CRIS systems for impact, particularly for business planning:

*"Senior leaders and research office staff within institutions want to collect information on research impact to benchmark their institution against other institutions, both within the UK, but also nationally.[…] Good business intelligence also allowed stakeholders to demonstrate value, exploit strategic gaps and opportunities, and remain competitive."*

The contribution of impact to student impact was highlighted by Professor David Cope in his think-piece:

*"I need not elaborate on the challenge of attracting first-rate international students but I cannot help wondering whether a contribution to success here might come from setting out clearly, with convincing substantiation, that advanced study at a UK institution would be set within a framework of nurturing and encouraging a focus on impact – and that UK academia has an edge on this with rival suitors. "Come to the UK to study – it will benefit not just yourself but the work!" might be the claim that will motivate much thinking."*

Higher Education Institutions make a vital contribution to the economic prosperity of their localities as major employers and buyers in their own right, and are pivotal to the implementation of the Government's Industrial Strategy in supporting the growth of other businesses. In particular, the Government's response to Lord Heseltine's review, "No Stone Unturned" identifies "forging stronger links with researchers, universities and businesses to develop, support and maintain the UK's world class knowledge base" and "encouraging business schools to play a greater part in improving the leadership and management capability of local businesses" as priorities. Sir Andrew Witty is to lead a review to explore how universities can support LEPs and other local actors to drive growth (Universities UK, 2013). As Rachel Bruce from Jisc summed-up at the DESCRIBE conference, "*universities are recognising that engaging in research impact and working with businesses and communities can actually give themselves a competitive advantage and actually make them more strategically relevant to both the economy and society.*"

It will therefore become increasingly important for higher education institutions to cement and evidence their regional presence and articulate not just the impact of their academic research but the aggregate effect of all their activities on their local and regional economy[6]. This will naturally involve capturing and analyzing detailed information about the people employed by an institution, the grants that are awarded to it and the products that are produced, underpinned by a conceptual framework describing the relationships between them (Figure 1).

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[6] Kelly, McLellan and McNicoll quoted in Husbands Fealing (2013) define higher education impacts as: (1) the impact of a university or college as a business and the higher education sector as an industry; (2) higher education increasing the skills base and 'absorptive capacity' through its students and graduates; (3) research and innovation and the transfer of this knowledge to the host economy; and (4) creation of externalities: social, cultural and environmental.

Figure 1    Person-Centred Theory of Change Model used for the HELIOS project
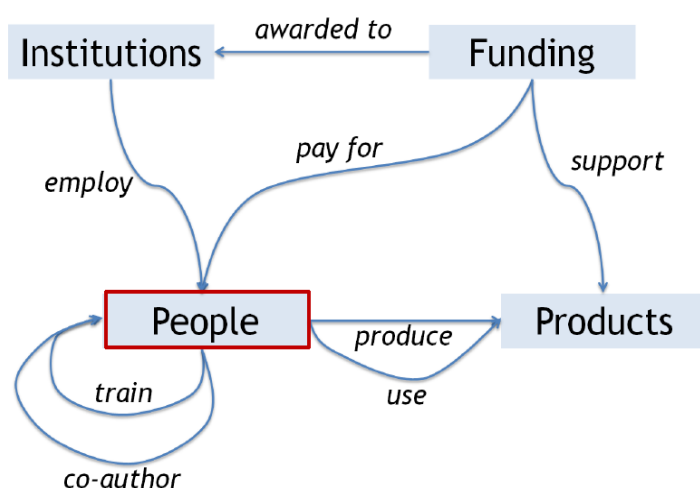


Adapted from Ian Foster, University of Chicago

*Source: Julia Lane "Next Steps in Addressing Impact"[7]*

## Implications and challenges for impact

Set against the uses of impact-related information highlighted above are significant resource implications, and considerable conceptual and methodological challenges. A recent evaluation of the Excellence in Innovation for Australia trial undertaken by RAND Europe (2013) estimated that the "costs associated with the identification, articulation and evaluation of impact case studies are estimated to be about five to ten days (or AU$5K-AU$10K) per case study. This is very similar to time estimates generated for the pilot of the UK's REF". They concluded that "for every case study submitted for assessment, about AU$100,000 would need to be available for allocation to universities to make the exercise worthwhile." Certainly it has been observed in the UK that 'certain boundary conditions' - whereby the costs of assessment should be lower than both the cost of the activities assessed and the benefits derived from enhanced accountability – "were in danger of being overlooked" (Martin, 2012).

Some of the conceptual and methodological challenges inherent in assessing the impact of academic research are explored in chapter three and four respectively. The Expert Workshop included a discussion about an issue central to the concerns about measuring impact: who is determining value in the system? In judgement-orientated evaluations, specifying the criteria for judgement is central and critical and debating the merit or worth of a programme of activity depends on one's values and priorities (Quinn Patton, 1997)[8]. Concerns about how impact was valued and measured for different types of research were raised at the Expert Workshop with a key question posited "do we need more honesty from Government about some impacts being more important than others?"

The in-depth interviews found that some institutions were concerned about 'apples and oranges' issues arising when funders compare impacts across disciplines or types of research. HEFCE and Research Councils have sought to reassure universities that their

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[7] http://www2.lse.ac.uk/government/research/resgroups/LSEPublicPolicy/Impact-Presentations-2012/Julia-Lane-presentation.pdf Last Accessed 30th May 2013
[8] Utilization-focused evaluation: the new century text. Michael Quinn Patton, Sage books 1997.

funding regimes will not disadvantage certain types of research. For example, the REF2014 process will involve benchmarking case studies across universities *within* (and not across) units of assessment; and the Arts and Humanities Research Council (AHRC) has indicated that "Research councils are committed to funding research excellence with impact … [however], Research Councils will not be disadvantaging 'Blue Skies' research or research without immediate or obvious impact". It is not clear, however, where the "fault-line" lies or how the scoring, and subsequent allocation of funding will work in practice. Ultimately, HEFCE has full control over the allocation of the QR budget by setting differential pot sizes for individual subject groups, as well through the anticipated continuation of a non-linear funding algorithm where 4* research currently gets three times as much funding as 3* research in the UK.

Other concerns are you get what you measure, and that there is the potential to distort the nature of (basic) research by placing incentives or demands – however slight, light touch or selective. Similar arguments have been espoused by notable critics of the impact agenda, and there is perhaps the genuine risk of unintended consequences which attends any introduction of a new funding mechanism. A classic example of a potential casualty of distorting research behaviour, say the critics, would be the invention of the LASER: originally developed with little or no concept of what it might do for society in the 1950s. However, without the ability to run a randomised controlled trial over a period of up to 50 years, alternative mechanisms need to be introduced to monitor any unintended consequences of the impact agenda such as the recommendation for a House of Lords Select Committee review in a few years. HEFCE has already taken such steps by commissioning RAND Europe to review the REF 2014 process, and this is an important initiative.

## Conclusions and recommendations

The drivers behind impact are such that the agenda is likely to remain part of the higher education policy landscape for the foreseeable future.  Given the fairly bleak outlook for economic growth and the considerable constraints on central government funding – it will remain important for the sector – through Universities UK and other advocates – to continue to make a compelling case for higher education funding. As researchers typically have little or no influence over the capacity of their audience to 'use' their research findings, this should include further investment to support the pull-through and absorption of research through, for example, the use of intermediaries or knowledge brokers to mediate relationships or transmit knowledge between academics and research users.

The appetite for impact-related information among the agencies charged with distributing research funding to institutions and researchers for accountability and allocation purposes is likely to continue. However, their demand for researchers to identify, facilitate and evidence 'pathways to impact' need to be proportionate to the costs of these endeavours and recognise the conceptual and methodological challenges in doing so.

Higher education institutions' approach to impact should not be driven solely by what the funders are after but should prompt them to observe what is going on outside their institution and reflect on how it engages with that activity in a way that aligns with its values. This should include the use of impact-information to promote their reputation and brand, and articulate the contribution of the organisation to their local economy and community. The impact agenda will necessitate a degree of cultural change as researchers and institutions

re-orientate their practice and policies around this vision and the emerging requirements for impact-information. These conclusions lead to the following practical and specific recommendations:

**Research institutions**

- Senior Management and Senior Academics at both institutional and discipline level need to provide strong leadership in supporting cultural changes around the impact agenda. This involves communicating a clear message to staff the benefits of impact to both HEIs and the wider society. Ways in which academics can engage directly with, shape, and define the impact agenda as it unfolds nationally and internationally need to be explored.

- Should consider how best to accommodate impact within internal structures, job descriptions, annual appraisal and promotional criteria, pay awards and professional development opportunities

**Research funders**

- Should keep expectations for data capture under review to ensure that the compliance burden for HEIs is reasonable and manageable and is proportionate to the benefits of collecting this information.

- Should identify and disseminate best practice in what works in transforming research to impact along all stages of the impact journey, and across all disciplines and ensure that systems for assessing research impact recognise and respect differences in absorptive capacity, i.e. the ability to recognize the value of new information, assimilate it, and apply it, across disciplines and publics.

**Research enablers**

- Have a continued role in the short to medium term in supporting the translation and use of research.

# 3. CONCEPTUALISING AND DEFINING IMPACT

*"Eskimos are said to distinguish 50 words for snow. In contrast, European research agencies talk about impact, impact and impact, but they all mean different concepts, attach different importance to it and implement it in different ways."* (Reinhardt, 2013)

## Introduction

Impact remains a fairly generic concept in the realm of academic research. Whilst its definition as an "effect, change or benefit" on some identified phenomenon or condition is of course, easily understood; the project found that impact is conceptualised differently within different disciplines and research use contexts. Given the relative immaturity of the research impact agenda - compared to say programme evaluation, or even Public Engagement arguably - this ambiguity is perhaps to be expected. The project found that the goal of achieving common standards in conceptualising impact and defining associated impact measures and indicators is unlikely to be achieved in the near-term.

The scale of the definitional challenge should not be underestimated as the research community is large and disparate making it unlikely that consensus will be reached. It will take time for standards to evolve empirically and become universally adopted by research funders, producers and users. Furthermore, emerging technologies and analytical techniques will introduce a dynamic element to the agenda, consistently pushing the boundaries of what is possible and practical to monitor and report. The remainder of this sector explores:

- approaches to the conceptualisation of impact; and
- the development of impact metrics and taxonomies.

## Definitions and taxonomies of impact

The DESCRIBE literature review (Penfield *et al*, 2012) provides an introduction to existing definitions of non-academic impact and the various attempts that have been made to categorise impacts. The non-academic impacts of academic research conventionally fall into 'established' categories of practice, policy, and wider social and economic impacts (Scoble, Dickson, Fisher and Hanney, 2009) with the environment sometimes included - rather opaquely - within the 'social' dimension. Examination of impact *measures* (Table 1) suggests a high degree of commonality between the higher-tier impact categories identified by research funders and researcher so far, although the terminology used often varies. Definitions of *indicators* underpinning the measures are often not specified. This lack of prescription allows a more open, inclusive and often qualitative, approach to the description of impacts.

Table 1: Typologies of categories of impact

| | ESF (2012) | RCUK (2011) | HEFCE (2012) | Horton (2012) | Cooke and Nadim (2011) | Godin and Dore (2004) in Scoble (2010) |
|---|---|---|---|---|---|---|
| Policy | • Political: How policy makers act and how policies are constructed and to political stability | • Evidence-based policy-making and influencing public bodies and legislation<br>• Public services | • Public policy, law and services | | • Changes to clinical policy<br>• Improved policy making<br>• Influence on public policy debate | • Policy: policy makers, citizens, national security, public programmes. |
| Practice | | • Evidence based policy in practice; practitioners and professional practice. | • Practitioners and services | | • Improved patient care<br>• Improved public services | |
| Social | • Cultural: understanding of ideas and reality, values and beliefs.<br>• Social: Community welfare, quality of life, behaviour, practices and activities of people and groups<br>• Environmental: management of the environment<br>• Health: public health, life expectancy, prevention of illnesses and quality of life | • Cultural enrichment, quality of life, health and well-being.<br>• Social welfare, social cohesion and/or national security.<br>• Environmental sustainability, protection and impact reduction.<br>• Public awareness and understanding of science, economic and societal issues. | • Cultural life and creativity<br>• Health and welfare<br>• Environment<br>• International development<br>• Civil society<br>• Education<br>• Public discourse | • Cultural<br>• Educational<br>• Environmental<br>• Health<br>• Happiness<br>• Safety | • Cultural enrichment<br>• Environmental sustainability<br>• Improved health outcomes<br>• Changes to public behaviour (health)<br>• Social equity/inclusion and cohesion<br>• National security | • Culture: knowledge, know-how, attitudes, values<br>• Society: welfare, discourses and actions of groups<br>• Health: public health, health systems<br>• Environment: management of natural resources and the environment; climate and meteorology<br>• Symbolic: legitimacy, credibility, visibility, notoriety |

| | ESF (2012) | RCUK (2011) | HEFCE (2012) | Horton (2012) | Cooke and Nadim (2011) | Godin and Dore (2004) |
|---|---|---|---|---|---|---|
| **Economic** | ▪ Technological: creation of product, process and service innovations<br>▪ Economic: sale price of products, a firm's costs and revenues (micro level), and economic returns either through economic growth or productivity growth (macro level). | ▪ Wealth creation and economic prosperity (*i.e.* creation and growth of companies and jobs; business revenue and innovative capacity.<br>▪ R&D investment from global business<br>▪ Regeneration & economic d'ment<br>▪ Commercialisation and exploitation of scientific knowledge, spin out companies, new processes, products & services. | ▪ Economy<br>▪ Commerce<br>▪ Production<br>▪ Organisational | ▪ Wealth<br>▪ Economic | ▪ Improving performance of existing businesses<br>▪ New products or processes<br>▪ New businesses<br>▪ Collaboration<br>▪ Knowledge transfer<br>▪ Staff movement academia-industry<br>▪ R&D investment from global business<br>▪ Post-doc jobs<br>▪ Competitiveness<br>▪ Employment or revenue<br>▪ Healthcare costs | ▪ Technology: products and processes, services, know-how<br>▪ Economy: production, financing, investments, commercialisation, budget |
| **Capacity building** | ▪ Scientific knowledge: progress of knowledge formulation of disciplines, training and capacity building.<br>▪ Training: curricula, pedagogical tools, qualifications. | ▪ Organisational culture and practices<br>▪ Research capacity, knowledge and skills of businesses and organisations<br>▪ Efficiency, performance and sustainability of businesses/organ.<br>▪ Training of skilled people for non-academic professions. | ▪ Production | ▪ People<br>▪ Mixed other | | ▪ Science: knowledge, research activities, training<br>▪ Organisation: planning, work admin., human res.<br>▪ Training: curricula, pedagogical tools, qualifications, graduates, insertion into job market, etc. |

The experience of the European Science Foundation in developing indicators of internationalisation may offer some guidance on how this agenda may be taken forward (ESF, 2012). For example, the concluding section of the final report strongly recommends a participatory process to identifying and selecting indicators involving both users and experts on indicator development:

> "[the] interactive process between users and experts is therefore not only a robust basis for indicator development but was also considered the only way to do it. Skills in indicator design are essential but the participants were convinced that, if proposals had been prepared by experts without interaction with users, the design phase would have been faster; however, in such a case the consensus on the usefulness and on the requirements for data collection would take much more time to reach."

In their think-piece, Jones and Grant (2013) conclude that "we are at the beginning of a collective journey exploring the feasibility of developing impact indicators" and identify the "real challenge" for impact is "understanding what kinds of impact categories and indicators will be most appropriate, and in what contexts." They cite this as an opportunity and a danger with the potential for the definition of impact indicators up front to "unnecessarily 'close down' the exercise."

The expert workshop and in-depth interviews generated some interesting ideas about impact metrics some of which (such as the analytics approach) are developed elsewhere in this report. Briefly, the analytics approach is about "harvesting the data exhaust left by users of any IT system and putting it to good use". It involves starting with the data and seeing what categories "drop out" from it. Project contributors also acknowledged that Open Access would be a key driver for change and would permit the academic community to collect raw data and make it transparent, and enable researchers to develop and test multiple views of what constitutes impact together with trialling of alternative metrics. Linking data with national datasets using standard Uniform Resource identifiers was also identified as an opportunity to allow novel metrics to emerge and widen their scope.  It is also manifestly clear that recent advances in scientometrics and Article Level Metrics ('altmetrics') provide potentially rich and dynamic data sets which could provide robust indicators of public interest. However, such data needs to be seen from the outset as of arguably highly limited use to demonstrate social or economic impact since by its very nature it is primarily evidence of an 'occasion of influence'. However when citations are made in government reports or in NICE guidelines, and arguably when these are then Tweeted globally, altmetrics show real potential. Nevertheless, a citation in a policy paper may provide evidence of an impact on Government policy; but a purposeful evaluation study would be required to evidence the impact of the change in policy on the community affected.

## Conceptualising impact

Theory-building and logic-modelling is essential to establish causal inference in evaluation. Kaye Husbands Fealing introduces her think-piece on evaluation by stating:

> "The practice of assessment should [..] be anchored in a theoretical framework that formally represents the system under investigation, and that offers clear direction on where the likely outputs, outcomes and longer term impacts are that result from inputs and activities in the system. This framework should also include elements from

*contextual environments that influence and/or interact with various aspects of the system."*

The Jisc-funded Embedding Impact Analysis in Research project provides several examples of how theories and frameworks and tools helped project teams better understand the "complex processes of research, knowledge exchange and impact" and appreciate the "complex networks and environments within which universities are operating" (NCCPE, 2013). The DESCRIBE project encountered two emerging approaches to conceptualising research impact. The first approach developed by Dr Averil Horton from Brunel University Business School describes impact as a journey with impact viewed, "not a single thing, [..] not merely an endpoint, [and] not a single 'happening', and does not occur at a single time" (Horton, 2013). The approach, combined with further work on audience and Pragmatic Impact Metrics (Horton, 2013), provides the foundation for Brunel's internal Impact Academy Initiative and their Impact Tool-kit which are used by Brunel academics "to understand, identify, report and capture impact, for the REF, for Pathways to Impact statements, and for their own career development". Dr Horton was invited to develop her additions within a think-piece submission for the DESCRIBE project.

The second approach to impact is based on the application of Contribution Analysis to evaluating research impact – an approach that is being developed and championed by Dr Sarah Morton from the University of Edinburgh. Both approaches are explored in more detail in the following sections of this chapter.

## Research as a journey

The impact journey entails tracing research impact over time including identification of distinctive stages in its development, and its subsequent diffusion between disciplines and the wider society. The impact journey as depicted by Horton (2013) is presented in Table 1. The journey begins with 'inputs' represented by a research hypothesis, question or theory, the formulation of which results in a change in ideas. Research activities are then directed or applied to these inputs, and knowledge is generated. This knowledge is communicated and shared through the production of reports or other means ('outputs'). These outputs are then translated ('translation') and used ('usage') by others with subsequent potential for a change in understanding and behaviour. The final stages of the model capture the potential impacts of research use on the conditions of a specific group and the wider population. Conventionally, research is said to have impact if measured consequences can be attributed to the research at the translation, usage and impact stages.

The impact journey 'provides a useful lens with which to examine the components of existing impact schema' – such as those contained in the REF guidance. In particular, it allows a distinction to be drawn between interim impacts, for example, changes in policy and practice, with the final indicators that capture the consequences of these changes for the end recipient of the service or policy. The distinction is useful because it helps to tease out some of the nuances of impact.

*Table 1: The Impact Journey*

| | Inputs | Activities | Outputs | Translation | Usage | General Impact | Specific Impact |
|---|---|---|---|---|---|---|---|
| **Description** | Ideas, theories hypotheses | Discovery/ understanding | Engagement with others, especially users, communication | Translation/brokerage /mediation /mobilisation/influence | Utilization/implementation/ /execution /agency/application | More good things Fewer bad things New options | Specific benefits accruing to specific groups |
| *The Storyline* | Our interest/the problem was... and we had the expertise in… | So we researched …. in order to … | *Through the use of …* *we ensured the right people know about our results* | *Through dialogue with….* *the implications became clear in different contexts* | Our research was used/adopted /adapted /applied/trialled /tested by… | The general benefit was… | The specific benefits were …. and accrued to…. |
| **Result** | *Change in ideas* | *Change in knowledge* | *Change in knowledge distribution* | *Change in understanding* | *Change in behaviour* | *Change in condition* | *Change specific in condition* |
| **Specificity** | Discipline | Discipline | Discipline | Discipline & Application | Discipline & Application | Application | Application |
| **Reach** | Proximate | Proximate | Proximate | Systemic | Systemic | Systemic | Systemic |
| **Most Common Type** | Knowledge | Knowledge, People/capacity | Knowledge, People/capacity | Knowledge, People/capacity | People/capacity, social, economic | Social and economic | Social and economic |
| **Development** | Impact plans | Impact expectations | Impact intentions | Impact opportunities | Impact potential | Impact emerging | Impact reality |

Source: Horton (2013)

The LSE Handbook for Social Scientists (2011) offers another model of impact. This differentiates between academic and external impacts; and primary and secondary impacts whereby primary impacts are defined as 'observable occasions of influence' and secondary impacts comprise changes in organizational activities or outputs and changes in societal outcomes (Figure 2).

Figure 2          Conceptualisation of the primary and secondary impacts of academic research

Figure I.1: The primary and secondary impacts of academic research
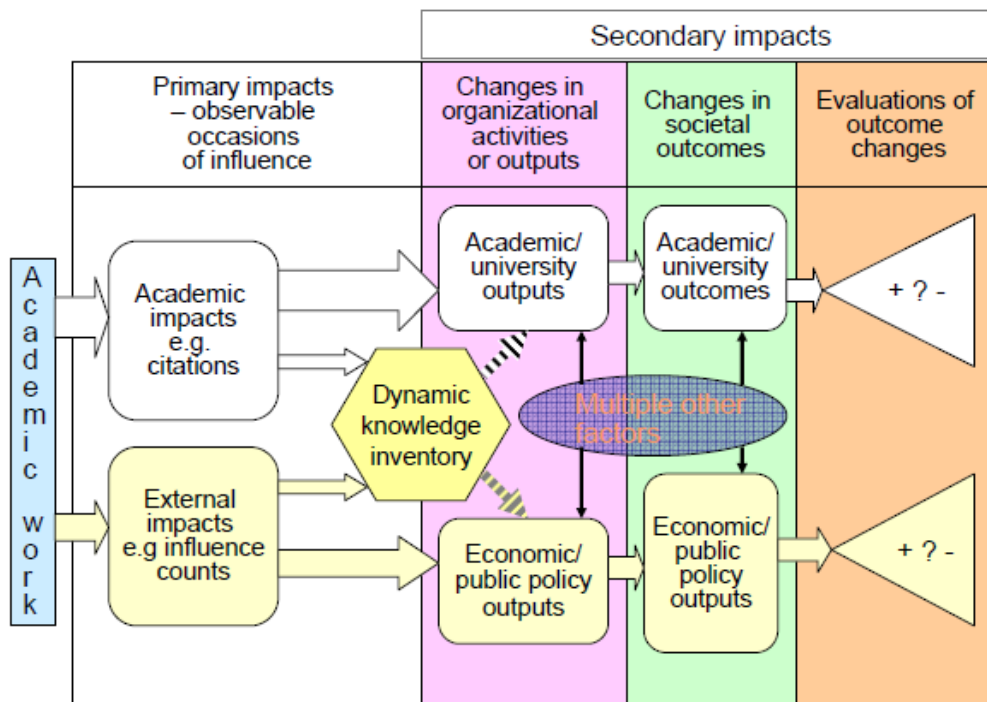
## Translation and use of research

The authors of the LSE handbook argue that "metrics or indicators can tell us about many aspects of potential *occasions of influence* [*i.e.* use], but not what the outcome of this influence was"[9] (LSE, 2011). The authors advocate a "...'revealed preference' approach to finding external impacts, looking for a residue or 'footprint' and assigning to each reported influence as much credibility as the available evidence allows." The research could be used by a business corporation, government agency, a civil society, organisation or the media.

The social science policy analysis literature makes a distinction between the conceptual and instrumental use of research (Nutley *et al*, 2007). While the instrumental, direct use of research on policy and practice decisions is often the desired goal, research more commonly

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[9] *HEFCE-funded project on impact in the social sciences undertaken by the LSE Public Policy Group (2011). The LSE Public Policy Group (LSE, 2011) differentiated between primary impacts - as 'observable occasions of apparent influence' and secondary impacts – which incorporate changes in organisational activities or outputs and changes in societal outcomes.*

'achieves influence through a slow, diffuse process in which it seeps into policy and shifts how people think about problems and orient themselves to issues' (Nutley *et al*, 2007). Conceptual use of research is harder to track than instrumental research. In terms of the impact journey, conceptual use can be viewed as a product of research translation while instrumental use is a product of research usage.

Two useful sources of guidance on enhancing research use have been published during the lifetime of the DESCRIBE project. These are the:

- The ESRC's Cultivating Connections discussion paper reporting on its work to better understand the "main routes to impact, and the associated enabling factors" (ESRC, 2013).

- The Uses of Research in Policy and Practice paper published by the William T. Grant Foundation based on the early findings from a research programme designed to 'build stronger theory and empirical evidence on when, how, and under what conditions research is used' (Tseng, 2012);

Both refer specifically to the social sciences but the lessons contained therein are relevant to other disciplines.

The William T. Grant Foundation paper identifies critical gaps between research, policy, and practice [within the education sector in the United States specifically], and suggests that these could be filled if the research community had a stronger understanding of how practitioners and policy makers engage research, including their definitions of research, their perceptions of its relevance and quality, their preferred modes of communication, and the forces that influence their research. Tseng (2012) claims 'understanding how practitioners and policy makers use research is an area that is ripe for scientific study'. Among the early lessons from the research study is the identification of 'translation' as a critical issue and the need to 'reflect intentionally on who makes for the best translators and how to create productive contexts for translation'. She identifies three options:

- Researchers as translators – because of their 'expertise drawing conclusions based on research design and knowledge of how things fit with the broader literature

- Intermediaries – because they already have trusted relationships with decision-makers

- Intermediary organisations to be relationship brokers bringing researchers and decision-makers together to focus on core problems of policy or practice

She concludes, 'understanding users, taking on translation roles or working with translators, and building partnerships require shifts in our practices, incentive systems, and expertise. Relationships are resource intensive. It takes time and money to build relationships, establish trust, and develop shared commitments – and more of the same to maintain them'. The success or otherwise of these efforts will depend greatly on the 'pull' of research and impact findings from intended and unintended end users. Furthermore the ability of researchers to evidence any ensuing impact will depend on the extent to which research users acknowledge the contribution of the research to changes in their understanding or behaviour. As the ESRC (2013) has acknowledged "even when analysts and policy-makers work in the same organisation, it is equally difficult to identify precisely how the knowledge and expertise of social science have contributed to particular policies."

The ESRC discussion paper (2013) identifies the importance of long term relationships and networks with research users as the key enabling factor for generating impact. Other determinants of impact include:

- Involving users at all stages of the research, including co-production of knowledge and evidence where possible

- Well-planned user-engagement and knowledge exchange strategies, using targeted and accessible formats

- Understanding of policy and practice connects and timescales

- Portfolios of research activity that build reputations with research users

- Good management and infrastructure support providing opportunities for two-way dialogues between researchers and user stakeholders such as work-shadowing, visiting fellows, communications resources (*e.g.* policy briefings), and knowledge brokers.

- The involvement of intermediaries and knowledge brokers as translators, amplifiers and network providers.

Professor David Cope draws on his recent experience as Director of the Parliamentary Office of Science and Technology in his DESCRIBE think-piece to offer useful advice to academics seeking influence within Government. Opportunities highlighted include: interaction with so-called "All-Party Groups" (APGs) of parliamentarians; submitting evidence to formal inquiries conducted by parliamentary committees; and acting as peer reviewers for briefings before they are finally published. His submission also includes a practical tip:

> *"if you can genuinely do it, [..] give information on analogous circumstances in other countries, especially Europe and North America. There is nothing that parliamentarians love more than being able to explore how things are done elsewhere, so that they can recommend either to emulate, or to avoid, lessons from overseas."*

## General and specific impacts

There would be much to be gained in promoting consistent terminology and definitions with respect to final or end impacts on the economy and society. The DESCRIBE project found these variously called general and specific impacts (Horton, 2013), secondary impacts (LSE, 2011), extended outcomes and wider impact (DESCRIBE interviewee) and derived impact (DESCRIBE interviewee). Final outcomes are generally measured at the societal or economy level (for example, the impact of the adoption of a particular innovation on a nation's GDP). Outputs and Outcomes are also often found as examples of impact, and the array of terminology and attendant theorising by impact 'specialists' can be seen to be a weakness when the primary beneficiaries of 'impact', *i.e.* those outside academia, begin to see the academic community as over-complicating the very thing which they are bent on achieving!

One of the major conclusions from the HEFCE-funded, *Impact of Social Sciences Project,* was that while it is currently possible to quantify and compare primary impacts defined as occasions of influence for individual researchers, research teams, institutions, disciplines and countries, it is only possible in the current state of knowledge and technology within the social sciences to itemize extended secondary impacts at the very aggregate level, for

example, for countries and disciplines (LSE, 2011). Furthermore, identifying secondary impacts requires deploying a purposeful evaluation strategy with methodologies designed specifically to identify research effects. This would ideally be conceived and implemented at the research design phase with the involvement of research user stakeholders. Such an endeavour is not without cost and would only conceivably be undertaken at the macro-level (for example, by a Research Council).

## Contribution analysis

While the Impact Journey framework is "not a statement of how research and impact occur", the implicit assumption is that for impact to have any chance to occur the communication of ideas must lead to a change in knowledge, which leads to a change in behaviour, which may lead to a change in conditions for the user. Stages of the impact journey are necessary, but not necessarily sufficient for impact to occur.  Contribution Analysis uses a similar 'theory of action' model but at each stage endeavours to make the assumptions about how the research influences each stage explicit; and therefore make the linkages between the research and impact more credible. Contribution Analysis was initially developed by Maine (2008) and is "especially appropriate where there are multiple projects and partners working towards the same outcomes, and where the ultimate impacts occur over long time periods influenced by several cumulate outputs and outcomes over time" (Patton, 2012).

> *"Contribution analysis works well for understanding and interpreting results in complex systems where a variety of factors and variables interact dynamically within the interconnected and interdependent parts of the open system. Contribution Analysis focuses on identifying likely influences. Contribution analysis, like detective work, requires connecting the dots between what was done and what resulted, examining a multitude of interacting variables and factors, and considering alternative explanations and hypotheses, so that in the end, those involved can reach a reasonable judgment based on the preponderance of evidence." (Patton, 2012).*

It is perhaps not surprising, therefore, that contribution analysis has been used to examine the impact of research (Centre for Research on Families and Relationships, 2013) and other interventions such as prizes where, for example, attribution cannot be determined through experimentation (Vaessen and Raimondo, 2012).

## Conclusions and recommendations

Impact remains a fairly generic concept within the realm of academic research although various funders have defined it for their own purposes. There are conflicting views as to whether attempts to differentiate between different types of impact constitute a 'fetishizing' of the agenda (*e.g.* when addressing the beneficiaries of research, does it help to distinguish 'outputs' from 'outcomes' and 'impacts', between 'primary' and 'secondary' impacts or between 'conceptual' or 'instrumental' use of research?) or provide useful distinctions within a framework whereby the use and subsequent impact of academic research can be more easily understood and assessed. Certainly, conceptual frameworks that attempt to articulate the 'theory of change' underpinning assessment of research impact *can* be useful in making assumptions about how change happens, and to whom explicit. This approach is common practice, for example, in establishing causal inferences in programme evaluation and in this

context can help to identify potential audiences of the research and identify where impacts may be realised and later evidenced.

Practical approaches to impact have been developed and tested by Brunel University (the 'Impact as a Journey' framework) and the University of Edinburgh (application of Contribution Analysis) to assess the impacts of academic research. Their success in these contexts suggests that the approaches have much wider application.

The translation stage of the impact journey is particularly crucial in encouraging research use and creating the possibility for impact. Good practice in this regard includes reflecting intentionally on who makes for the best translators and how to create productive contexts for translation. The potential for impact will be governed to a certain extent by the absorptive capacity of research users and the opportunities. Understanding the context for research use and subsequent potential for impact may help researchers to form realistic expectations about what is possible in any given context.

The project sought to explore the potential for impact standards and taxonomies. Existing taxonomies typically have a fairly high level categorisation of impacts and have not attempted to define these measures or develop associated indicators. Such approaches accommodate the heterogeneity of the research enterprise and its ensuing impacts and are broadly welcomed by the research community. More detailed categorisations have been criticised for being overly prescriptive (albeit intellectually attractive). And while moves to 'close down' definitions impact should be resisted there are standards and taxonomies which are needed to form the basis of research information systems that are capable of providing light-touch solutions to capturing evidence of impact. A judicious balance, therefore is required, between a search for absolute standards and definitions on the one hand, and relatively defined impacts on the other.

Our conclusions with respect to the conceptualisation and definition of impact lead to the following recommendations:

**Research institutions**

- Senior management within HEIs should adopt the conceptualisation of impact as a journey when seeking to promote a shared understanding of impact within their institutions. This may, for example, include the provision of professional development opportunities that incorporate approaches to conceptualising impact, support reflection on the most appropriate translators for research and consider how productive contexts for translation can be created. Expectations for impact should be realistic and context-specific.

**Research funders and enablers**

- Should retain an open definition of impact that incorporates all stages of the impact journey to ensure that a full range of impacts are considered. Attempts to over specify and define low-level categories of impact should be resisted over the short to medium-term.

**Research enablers**

- The National Centre for Universities and Business should consider how it can: (i) communicate to business, commerce and the third sectors why impact is important to

universities and research funders; and (ii) encourage businesses and policy makers to acknowledge and articulate the influence of academic research.

# 4. METHODOLOGIES FOR ASSESSING IMPACT

## Introduction

The previous section explored definitions and conceptualisations of impact and the factors that are associated with research use and ultimately, impact. While achieving impact is in itself a worthwhile act, only those impacts that can be evidenced can be properly identified as impact. In 2007, Nutley *et al* concluded that "work fully assessing research impacts, in particular work that takes account of the kinds of complexity and unexpectedness of research use [..] has, to date, been somewhat underdeveloped." It perhaps says something about the priorities for research over the intervening years, that this conclusion still holds today, although there have been some fairly recent, mainly technological, developments that may assist in evidencing impact in future.

Due to the importance and complexities surrounding these issues, the DESCRIBE project commissioned two methodology-orientated think-pieces: the first, explored the 'state of the art' in methodological approaches to assessing impact in scientific and social policy areas and identified lessons from existing good practice; while the second, produced by Kaye Husbands Fealing from the University of Minnesota explored ways in which 'current standards of research impact evidence can be strengthened, expanded and used consistently across the sector'. While this chapter draws heavily from these submissions, the original commissions are commended for detailed considerations of the issues summarised herewith. While not intending to be a tool-kit or 'how-to' guide, the remainder of the chapter attempts to provide some insights that may help university professional staff and academics when considering what to evaluate, and how.

## Impact assessment and evaluation

Kaye Husbands Fealing quotes a useful definition of impact evaluation from the HM Treasury's report *The Magenta Book—Guidance for Evaluation* (HMT, 2011). This confirms that best practice in impact evaluation is estimating the "what would have happened in the absence of the policy...the counterfactual." The report goes on to state that: "Establishing the counterfactual is not easy, since by definition it cannot be observed – it is what would have happened if the policy had not gone ahead. A strong evaluation is one which is successful in isolating the effect of the policy from all other potential influences, thereby producing a good estimate of the counterfactual." (HMT p. 19)

Furthermore, the International Initiative for Impact Evaluation (2008) defines rigorous [programme] Impact Evaluations as "analyses that measure the net change in outcomes for a particular group of people that can be attributed to a specific program using the best methodology available, feasible and appropriate to the evaluation question that is being investigated and to the specific context."

These two definitions are helpful because together they emphasise four features of evaluation that are important in the current context of research evaluation:

- Firstly, impact evaluation concerns itself with "net" impacts and the estimation of the counterfactual defined as the "comparison between what actually happened and what would have happened in the absence of the intervention." In the context of research this

means considering whether, and the extent to which, impacts attributed to a study would have happened in the absence of the research. Estimation of the counterfactual is one the main challenges of evaluating the impact of academic research.

- Secondly, "impact" typically refers "to the final level of the causal (or log frame)" (White, 2010). These are the broad impacts described in the latter stages of the impact journey described in the previous chapter. It has been argued elsewhere (LSE, 2011) that it is impossible, currently, to measure these final or end impacts (*i.e.* secondary impacts) of social science research at anything other than the aggregate level.

- Thirdly, net impacts are usually measured through purposeful evaluation studies; that is, are rarely computable through the collection and analysis of monitoring information. This has resource implications for evaluating the impact of academic research.

- Finally, methodological decisions within evaluation are generally governed (*i.e.* constrained) by evaluation use and context - typically time and funding. This usually involves smaller budgets and shorter-time scales than research. As a consequence evaluators and research may have conflicting views on what constitutes 'rigour' and 'quality' in terms of data collection methodologies.

There have been calls for pluralistic approaches to impact evaluation from the realm of international aid where concerns have been voiced about the inappropriateness of experimental and quasi-experimental methodologies (often seen by philanthropic donors as more rigorous) to evaluate the impact of research communication and advocacy activities (Jones, 2009). It was, subsequently, warned that "these policy areas could come under unwarranted pressure, or lose funding" and that results based approaches to impact would "generate incentives that go against key practices and hard-learned lessons about aid effectiveness, accountability and learning, and how change happens."

## Audience and purpose

Four purposes (and related audiences) can be identified (Jones and Grant, 2013):

- The need for the research community collectively, for example, through Universities UK and the Research Councils, to advocate the need for, and continued funding of, research. As Jones and Grant (2013) suggest these arguments are "best made at the macro-economic level, supported with compelling narratives or case studies" where the focal unit is an entire research regime or sections of it (*e.g.* by discipline or research council level).

- Related to advocacy, the research community needs to be accountable to those who fund its activity. In the UK, the Research Councils require Pathways to Impact statements as part of a funding application and outcome and impact metrics are routinely reported through their research management systems. This information collected is usually at the micro level (i.e. individual project or researcher level). The qualitative nature of much of the impact information captured at this level makes it difficult, if not currently impossible, to aggregate the information.

- The UK is unique in using impact-related information to directly inform the decisions about the allocation of research funding. The REF system is designed to reward universities that generate high quality research with impact. These are judged on the basis of peer-reviewed case-studies.

- Finally, there is a need for analysis to understand what works in research funding. This could involve an improvement-orientated evaluation to explore what works within a specific regime or a knowledge-orientated evaluation that seeks to contribute to current understanding about, for example, what works in transforming the use of the research.

Horton (2013) also considers audience in her think-piece on Impact as a Journey. This is mainly, however, within the context of what information is communicated rather than audience as a factor influencing data collection methods. Related to audience, is the focal unit for evaluation. Nutley *et al* (2007) distinguishes between two focal units, for assessing research use:

- organisational level, that focus on the activities of a funding agency, a research production facility, a potential research user organisation and its staff, or even the entire research regime in a county;

- level of research itself, the assessment may consider the impact of individual projects research synthesises of summaries, or whole programmes of work.

## Methodological challenges

The methodological challenges inherent in evaluating the impact of academic research are well documented in other DESCRIBE outputs (Penfield *et al*, 2012; Jones and Grant, 2013; Horton, 2013; Husbands Fealing, 2013) and in the wider literature and are therefore only briefly considered here:

- Time – final or end impacts of research often materialise long after the research has been completed. This can make it difficult to capture and track routes to impact, especially if the principal investigator leaves the organisation. Furthermore, research impacts often change over time and are transient, making decisions about when to evaluate critical.

- Attribution – as we have noted earlier, it is often difficult to measure the extent to which impacts have resulted from research outcomes. Some commentators have suggested that it is more helpful to talk about the contribution of research to wider socio-economic impacts with contribution and attribution representing two opposing points along a sliding scale. Care should be taken not to confuse this view with that of Jones and Grant (2013) who define "contribution to refer to the proportional effort made by the research team to the creation of the outputs."

- Research is co-produced – making it difficult to isolate the impact of a particular research project (*i.e.* the research contribution as defined by Jones and Grant, 2013).

- Assessment at the margin – any system must be able to "differentiate and scale different research impacts." Evaluation is always about judgement and values.

- Transaction costs of assessing research impacts. A recent evaluation of the Excellence in Innovation for Australia trial undertaken by RAND Europe (2013) estimated that the "costs associated with the identification, articulation and evaluation of impact case studies are estimated to be about five to ten days (or AU$5k-AU$10k) per case study. This is very similar to time estimates generated for the pilot of the UK's REF". They concluded that "for every case study submitted for assessment, about AU$100,000

would need to be available for allocation to universities to make the exercise worthwhile."

Estimating the counterfactual – measuring the difference between what happened as a result of the research and what would have happened anyway - is a major methodological concern as the nature of research means that experimental or quasi-experimental approaches are often inappropriate[10]. Jones (2009) however claims that "evaluation of a counterfactual is only one way to look at causality, and is applicable to less than 25% of policy areas" and reports that "some argue that, in the social sciences, the best way to understand cause and effect is to look at why people change their behaviour". Indeed, the core theory of change underpinning the HELIOS project (OST, 2013) is built around the observation that "science is done by scientists, and hence metrics should be based on describing human interactions and the results of those interactions, rather than counts of patents and publications." This is a similar theoretical approach to Contribution Analysis described earlier.

## Starting points for impact assessment

Nutley *et al* (2007) identify three starting points or approaches to assessing research use which may be viewed as close relations to the 'journey' and 'contribution' approaches described elsewhere:

- Forward-looking studies which track from "research, to research use and on to research impacts" focussing on how "research outputs make their way into user communities, and would assess the impact they have there, and how these ultimately play out in the design and outcomes of public services";

- Backward looking studies that take user communities as the starting point with the aim of understanding "the extent and processes through which their decisions and actions are influenced by bodies of knowledge, including research."

- Intermediaries or brokers of research examining the effectiveness of research enhancement activities.

Jones and Grant (2013) also highlight determining the starting point for analysis as a challenge in evaluating impacts from research. They argue "that as a general principle, the organisational unit of analysis should be based on the unit that is least likely to be multi-faceted. In our experience, it is more likely that research will have multiple impacts, which supports the argument for assessing research impact from a research perspective as a starting point, rather than trying to highlight particular areas of impact and understanding what kinds of research, research groups, or researchers contributed to them. However, as the different examples above highlight, the argument extends beyond this to whether assessment is done at the individual, group, institution, or country level."  Tracing forward or backwards from research is also sometimes referred to as "historical tracing" (Husbands Fealing, 2013).

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[10] It is often difficult to establish a plausible control group similar to that using or benefiting from the research. Furthermore, many complex interacting factors influence research impact, it is not a simple treatment X creates effect Y scenario.

## Methods decisions

Both Husbands Fealing (2013) and Jones and Grant (2013) provided an overview of evaluation methods, gave examples of their use and considered their respective strengths and weaknesses. Jones and Grant (2013) distinguish between ways of collecting data, and approaches which typically synthesise a number of data sources.

**Table 1. Evaluation Methods**

| Ways of collecting data | Approaches to synthesising data |
|---|---|
| **Bibliographic databases** | Bibliometric analysis[11] |
| **Patent information** | |
| **Document reviews** | Analytical/conceptual modelling of underlying theory |
| **Interviews**[12] | Case Studies[13] |
| **Site visits** | |
| | Peer review |
| **Surveys** | Econometric and statistical analysis |
| | Socio-metric and social network analysis |

*Adapted from Husbands Fealing (2013) and Jones and Grant (2013)*

Jones and Grant (2013) assess the strengths and weakness of different research impact assessment approaches in providing evaluative data for advocacy, accountability, allocation, analysis purposes. They conclude that "no single approach emerges as favourable across the 4 As" although:

- Bibliometric analysis can be useful for advocacy, accountability and analysis purposes.

- Peer review is used for accountability and allocation (for example, through REF).

- Case studies are used for advocacy, analysis and allocation.

- Econometric analysis is used for analysis and accountability purposes.

## New and emergent methods and challenges

Jones and Grant (2013) identify two general types of emergent approaches: "*data mining* which relies on various 'crawling' technologies to comb through existing databases of web-based information and can also be combined with data visualisation techniques; and *interaction based approaches*, which focus on researcher and stakeholder interactions as the means through which impact occurs." Their think-piece provides a useful critique of the

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11 Includes: Count (tracking quantity of research outputs); citations (assessing frequency with which others cite publications or patents and noting who is doing the citing); and content analysis
12 Incorporating expert judgement.
13 This includes purely descriptive case-studies as well as those that also include quantification of economic effects

approaches and identifies the main 'branded' approaches available. Short descriptions taken from their contribution are presented below.

## Case Study 1: STAR METRICS

STAR METRICS (Science and Technology for America's Reinvestment: Measuring the EffecTs of Research on Innovation, Competitiveness and Science) is a metrics-based approach which aims to make the most use of existing datasets to create a comparable and reproducible database of performance from individual researchers. STAR METRICS measures performance according to two levels: 1) economic support through jobs created and 2) wider impacts such as economic growth, workforce outcomes, scientific knowledge and social outcomes. In the STAR METRICS approach, analysis is conducted using individual researchers as the unit of assessment, on the basis that 'science is done by scientists'[14]. The exact metrics used to measure impact in these different areas are still being developed, but it has been indicated that these will include economic, social and health impacts as well as knowledge creation. It focuses on people as the creators of wider impact, and introduces ways of tracing this as they, and their research, move in and out of academic spheres.

*Source: Jones and Grant (2013)*

## Case Study 2: Altmetrics

Altmetrics, another data mining approach, concerns the creation and study of new metrics based on the Social Web for analysing and informing scholarship[15]. Altmetrics integrates many different types of applications to trace research in multiple ways, including, for example: ImpactStory, a way to track the impact of wide range of research 'artifacts'; ReaderMeter, a way to visualise statistics about authors and articles in relation to readership populations; and Crowdometer, a way to display tweets about a given article. Altmetrics provides an alternative way of understanding the wider impacts of research outside traditional academic domains. It picks up and makes use of what are essentially bibliometric approaches, but extends them in new ways. Its strengths lie in the idea that it can harness the increasingly 'e-oriented' environment for publication and interaction, thereby allowing for more effective tracking of the broader, non-traditional ways that research is having an impact. It provides a way of keeping current with the vastly expanding set of knowledge and information[16].

*Source: Jones and Grant (2013)*

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[14] Bertuzzi, S. (2010) 'STAR METRICS', presentation at First VIVO Annual Conference, 13 August.

[15] Altmetrics. (2013) 'Tools'. http://altmetrics.org/tools/ [accessed on 22 April 2013]

[16] Kaur J, Hoang DT, Sun X, Possamai L, JafariAsbagh M, et al. (2012) Scholarometer: A Social Framework for Analyzing Impact across Disciplines. *PLoS ONE* 7(9): e43235. doi:10.1371/journal.pone.0043235

**Case Study 3: F1000 Prime**

F1000 Prime provides an example of drawing together the wisdom of peer review with the technologies of data mining and crowd-sourcing[17]. It provides an in-depth directory of top articles in biology and medicine which are recommended by a 'faculty' of over 5000 expert scientists and clinical researchers, effectively establishing a system of peer review for top articles. From the numerical ratings given to the articles, a unique system of quantifying the importance of articles is created.

*Source: Jones and Grant (2013)*

**Case Study 4: Productive Interactions**

The Productive Interactions approach uses interactions between researchers and the people, places and things their research comes into contact with as a proxy for research impact. There are three main types of productive interactions which have been identified in this framework: direct personal contacts via direct communications, such as conversations or research collaborations; indirect interactions which occur by sharing a publication or by interacting through a website, prototype or other design; and financial interactions where there is an economic exchange[18]. Interactions are deemed to be 'productive' when they lead to efforts by the stakeholders to apply their research findings in some way, hence changing their behaviour. The methods used to evaluate the interactions vary, but all research is assessed against the goals of the institution, not broadly defined national or social goals.

*Source: Jones and Grant (2013)*

Some of these emergent approaches, such as altmetrics, can be linked to research management systems such as Symplectic or PURE and therefore provide researchers and others with additional - mainly demographic and geographic- information about the reception of their research outputs. The extent to which these indicators of research 'consumption' are adequate proxies of research impact is moot. Nevertheless, this is a rapidly developing technological area and it may be possible in future to gather evidence of resultant changes in understanding, behaviour or conditions among the receiving community. Currently, however, the approach has been described as 'evidence in search of an application for impact assessment' (DESCRIBE interviewee) – in other words a large quantity of data which is looking for questions as to why it was collected.

The think-piece contribution by Jones and Grant (2013) states that the:

> *"the real challenge for assessing and evidencing research impact is in understanding what kinds of impact categories and indicators will be most appropriate, and in what contexts. This is both an opportunity and a real danger. Defining impact indicators up front can unnecessarily 'close down' the exercise."*

They warn that single indicators presented in isolation can be misleading and distort the bigger picture and argue that the community "must embrace more nuanced ways of understanding how different kinds of impacts, and their associated indicators, interact". Finally, they suggest that "while at present there is an increasing focus on the use of impact

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[17] F1000 Prime (2013). 'What is F1000 Prime?'. http://f1000.com/prime/about/whatis [Accessed on 22 April 2013]

[18] Spaapen, J. and Van Drooge, L. (2011) 'Introducing "Productive Interactions" in Social Impact Assessment', *Research Evaluation*, Vol. 20, No. 3, pp. 211–218.

assessment for either allocation or advocacy, as seen in the REF and Environmental Impact Assessment respectively, we see a real opportunity in the use of *analysis* to drive forward the wider intellectual framework from which a robust evidence base for policy development in this area can be built".

## Conclusions and recommendations

While the desire to develop a single overarching framework for funding and assessment within which a differentiated approach is possible for groups of disciplines is powerful, Jones and Grant (2013) conclude that "[T]he inconvenient truth is that searching for a universal framework is unhelpful. The reality is that disciplines require different approaches to the assessment of research impact." Methodological approaches will also depend on the purpose of the research impact assessment and the focal unit for assessment: for example, the methods used to assess the economic impact of entire funding programmes on the UK economy for advocacy purposes will be very different than those employed to assess the impact of specific research projects for accountability purposes. The scale and complexity of the assessment enterprise and, more importantly, its cost will be determined by the value of the research activity and the value of the benefits derived from the assessment results.

Emerging technologies and, in particular, advances in web-trawling and analytical capabilities, are blurring the distinction between information systems and research impact methodologies. Currently, these largely provide researchers and others with additional - mainly demographic and geographic - information about the reception of their research outputs (*e.g.* Symplectic or PURE) but innovative approaches such as STARMETRICS also estimate the wider impacts of research (for example, on economic growth or social outcomes) assessed at the level of individual researchers.

Our recommendations with respect to methodologies are that:

**Research institutions**

- Need to understand, and be competent in deploying, methodological approaches to evidencing impact that can capture the institutions' "whole-system" influence on its external environment (for example, on businesses and local communities) and not just be restricted to those that are used to evidence the impact of academic research.

**Research funders**

- Should capitalise on opportunities that may arise to test and refine methodological approaches to evidencing impact across disciplines and research-user contexts at the European level, for example, through Horizon 2020.

- Research impact information requirements should (i) attempt to give parity of esteem between naturalistic/qualitative and experimental/quantitative data collection methods; and (ii) retain case studies as the preferred approach to presenting evidence of impact in the short to medium term.

**Research enablers**

- Should identify good practice in related fields (*e.g.* programme evaluation) that have potential to be transmitted to the research impact context and find ways to promote best practice and thereby supporting the professional capacity of the research impact community.

# 5. SKILLS, RESOURCES AND ORGANISATIONAL STRUCTURES

## Introduction

This section considers how universities and other research organisations might organise themselves in order to meet the requirements of the impact agenda. It also considers one of the key, and certainly 'unintended consequences' of the REF, namely the generation of the so-called 'Impact Industry'. This chapter draws principally on a think-piece by Ian M Carter, Chair of the Association of Research Managers and Administrators (ARMA) written specifically for the DESCRIBE project. Additionally, contributions have also been incorporated from DESCRIBE Expert Workshop participants and opinion formers and stakeholders who were interviewed as part of the project.

## Cultural acceptance

This report began with a discussion about the strategic case for impact and the proposition that universities needed to take ownership of the impact agenda through using it as an opportunity to revisit their core values, articulating these clearly to their staff and stakeholders and, if necessary, re-aligning their institutional resources, culture and structures to deliver the new vision.

Leadership is, of course, essential in communicating the importance of impact as an organisational priority and this must extend beyond senior management team level (although clearly it also needs to be evident here) ideally as far down as departments and research teams. The appropriate communication of the value of impact is critical within HEIs. Messages need to be carefully formulated and sensitively passed on. Those messages that focus solely on impact as a way of "improving the world" and that ignore "money" may seem disingenuous to staff who are already concerned about the role impact plays in the perceived "commercialisation" of higher education." This can exacerbate existing levels of cynicism about impact and the belief that the entire agenda is corrosive. To counteract this, informal (or formal) impact champions among academics and professional services staff could be helpful in disseminating positive messages and good practice within the organisation.

The DESCRIBE interviews identified a perception of different 'atmospheres' around public engagement and impact within HEIs, and the conviction among some, that impact needed to be understood broadly in the sense that it is a question of cultural change and awareness rather than one of systems and policies. This includes the attitudes and perceptions of staff as well as the broader institutional culture. The DESCRIBE literature review revealed the need for "cultural change to develop practices [of routinely capturing impact data] currently undertaken by a few to be incorporated as standard behaviour amongst researchers and universities". What is perhaps more important going forward is how we can understand the interrelated nature and mutual interdependencies of technological development, policy, training and cultural change.

The recent Jisc-funded "embedding impact" project explored issues of institutional culture, and the challenges of embracing impact assessment within research departments. The project found that for many academics, thinking about impact posed not only practical

challenges – *e.g.* how to capture evidence – but also raised profound questions about the purpose(s) of their work, and how they might need to work differently in order to encourage research use outside of academia. Useful triggers for addressing change management within the institution were also identified by the research.

## Approaches to impact

The provision of specific funding to support knowledge exchange capability and capacity (*e.g.* the Higher Education Innovation Fund, HEIF, in England, the Knowledge Transfer Grant, KTG, in Scotland) has encouraged institutions to think about how to engage and deliver within the impact "space" (Carter, 2013). This has typically led to the employment of staff with specific, relevant skills, often to help bridge the gap between producers and 'consumers' of research although:

> *"… such arrangements have not always been adequately integrated with the research activities (in the broadest sense), and hence perhaps have not been as effective in all cases as they might. It is interesting to see, currently, questions about how knowledge exchange and technology transfer staff and units can become more involved in the impact agenda, when one might have expected them already to be at the centre of it."* (Carter, 2013)

Embedding engagement with non-academic participants and audiences into the research process, and the utilisation of these participants as actors driving the translation of the research findings, are becoming far more common-place. While undoubtedly this represents progress, there does need to be a conscious effort to embed these activities early into the majority of research activities rather than trying to 'bolt them on' at the end. Such initiatives will also require the integration of IT and CRM systems which may well have been siloed between, for example, Technology Transfer, Business Relations and Alumni Relations. Even less well-developed, are collaborative approaches to evaluating the non-academic impact of research (Cousins, 2006). As we have noted elsewhere in this report, capturing evidence of research use is often problematic. For example, the ESRC found it difficult to evidence research impact even when the producer and user of research were in the same Government department (ESRC, 2013). It would therefore seem rational to engage with potential users at the very latest at the dissemination and translation stage, to explore opportunities for research use, and mechanisms for capturing ensuing impact.

Universities' approaches to impact are also influenced by their attitudes to risk, "especially reputational risk, but sometimes […] commercial risk, and opportunity risks" (Carter 2013). In particular, "the speed of deliberation and decision, along with constrained processes can also conflict with enabling use of research and institutional knowledge capacity. Potentially, some operational aspects intended to manage and reduce risk can actually have the effect of increasing risk at a strategic level. The impact agenda is one of the current areas testing our systems in this respect."

We have also noted elsewhere in this report that many of societies "great challenges" from climate change to the ageing population require multi-institution and cross-disciplinary teams in order to grapple with their intractable implications. These teams are well-placed to achieve impact and HEIs need to ensure that their systems and processes can accommodate this. For instance, embedding impact as a responsibility within a departmental or even higher-level tier may well fail to ensure that cross-disciplinary activities are adequately supported. If

impact is sufficiently high on the institutional agenda, the creation of cross-disciplinary and multi-organisational teams and activities should incorporate engagement with potential end-users of the research and their role should be embedded within the (broad level) research design itself.

The influence of the impact agenda on HEIs has yet to be systematically explored and given the immaturity of this field, perhaps this is understandable. Nonetheless, participants at the DESCRIBE workshop were concerned about how the requirement to evaluate the impact of academic research affected the research activity of their HEIs, and their internal organisational structures and practices.

## Skills and knowledge

The ESRC discussion paper (2013) highlighted the importance of long term relationships and networks which embraced research users, seeing this as the key enabling factor for generating impact in the social sciences. The ability to communicate often complex ideas in writing and in person is central to this, as is an understanding of the research context. Perhaps most, crucially, HEIs need to develop an understanding of how practitioners and policy makers engage with research, including their definitions of research, their perceptions of its relevance and quality, their preferred modes of communication, and the forces that influence their own research (*after* Tseng, 2012). As our think-piece (Carter, 2013) on this theme, notes:

> *"The range of skills required to enable, support, and undertake the development and translation of research results is quite broad. Some are very closely related to those required to undertake research, whilst others come from different fields. Some are technical, whilst others are soft and people-related. All such skills could be embodied in a single individual, the researcher, who would need to be something of a polymath. In most cases, however, one achieves this through a number of people, acting together as a team in order to encompass the set of skills and expertise, and to allow sufficient time and effort for both the research and the translation."*

This think-piece identifies and discusses the range of skills needed, and categorises them as: communication skills, commercial knowledge and skills and process and systems skills. Looking at the IT implications specifically, our experience suggests that IT developers should be better integrated with academic audiences throughout the process of systems development. In addition, one may add the knowledge needed to engage with research users, and capture evidence of research use (Tseng, 2012). The qualities of critical intelligence, openness, preparedness to change and listening skills were also identified as hallmarks of good practice in generating impact at the DESCRIBE expert workshop. A key question raised and debated at the workshop was the extent to which researchers and academics have - or can be expected to have - the skills required to enable them to respond to this agenda. The debate elicited a number of observations:

- Researchers need a range of skills to generate and evidence impact. This includes the ability to identify and engage stakeholders early in the research process, build impact into the research design; and write compelling 'stories of impact' for case study narratives.

- It is unlikely that all "impact-related" skills and knowledge will reside in one individual. It is more likely that academics will be supported by a team with experience of different methodologies and stakeholder relations. It is "dangerous" to rely on external consultants as the skills and capabilities needed to be developed and embedded 'in-house'.

- To what extent is it "fair" to expect the stereotypical shy, introverted academic to develop the interpersonal and networking skills required to establish and develop relationships with potential users of their research.

- Early career researchers may be more attuned culturally to the impact agenda compared to more experienced researchers (from an older generation).

The interviews suggested that whilst many academics are already engaging with impact, the agenda demands that it should be recorded systematically and articulated clearly. Impact diaries, information on citations and applications of research, and correspondence with external stakeholders were all identified as evidence of research use (if not final impact). Training is needed for early career researchers to embed impact as an essential and integral part of research practice. The project therefore concurs with earlier work that concluded that "the first step for the identification of socio-economic impact must be a programme of education to share and embed in the academic community definitions of socio-economic impact and how to recognise it" (Scoble, Dickson, Hanney and Rodgers, 2010). Taking this insight further, we recommend that this could potentially be designed and/or delivered in collaboration with research representatives such as the learned societies in order to encourage participation.

## Internal organisation of impact functions

A core task for individual institutions is to decide how much of the impact skill base should be embedded within academic researchers roles and how much within professional service staff. Furthermore, HEIs need to identify how much expertise should be in-house within the organisation and just how much might be prudent to outsource to specialists. Institutions are taking various approaches to obtaining or accessing the necessary skills. These include amending existing roles to incorporate relevant features and responsibilities, creating new roles, buying in expertise and services, modifying resource allocation and reward mechanisms, and adjusting recruitment and promotion criteria.

One pragmatic way of structuring impact expertise would be to situate it centrally and integrate it within existing activities, coordinating the assessment of research excellence alongside public engagement and HEIs already established knowledge exchange functions. However, it should remain important for individual researchers to reflect and internalise lessons. In practice, a mixture of centralisation and decentralisation in institutional support for impact available to academics has been observed. It should be noted however, that "academics are far more likely to be proactive and approach external organisations directly themselves rather than depend on university administrative offices to initiate such relationships" (Russell Group, 2012).

The project's interviews generated the suggestion that HEI consortia could usefully collaborate to 'co-produce' evidence for impact. The relevant 'think-piece' (Carter, 2013) notes that there are opportunities to buy-in the necessary skills:

*"There seems to be an explosion of providers, with at least one email a week offering services. These are typically tuned towards the specific (perceived) needs of the REF, with some being, frankly, cynical attempts to jump on a bandwagon and to exploit the natural worries of academic units. This is not a sustainable approach. Institutions should be looking to embed expertise into their routine processes and activities, so that they are fit for purpose, for delivering high quality research and enabling its appropriate translation into practical benefit, not just responding to a particular (albeit very important) assessment process."*

Use of external consultants to prepare case studies, in particular, was seen by some project interviewees as an effective way for HEIs to tackle the immediate impact task in the 'transitional stages' and some felt that consultants were better at identifying potential impacts at the proposal writing stage than academics and created more objective and credible case study narratives. In the main, however, contributors felt uneasy about the extended use of external consultants and that 'internalising' impact was the most desirable long-term strategy: as this would propagate an 'impact culture'.

## Structures and processes

As Carter's (2013) think-piece reasons, 'things only tend to happen if we have resources available'. Resources include time, funds, facilities, IT systems and personnel. Rationally, some university structures and systems will need to change in order to facilitate and demonstrate greater impact of their research.

Our project has found that activities to 'support translation, knowledge exchange, and ultimately impact need to be built into research projects' (Carter, 2013) ideally, from the start and for all research projects. There will be IT implications to this and projects also need to incorporate time to prepare for impact, and for researchers (or professional staff) to communicate, engage and exchange with potential research users. The LSE Public Policy Group (2011) identified four traditional categories of demand on academics' and university researchers' time, and "in addition to these traditional roles we can now add a fifth demand on academics' time, namely engaging in activities to disseminate ideas and explicitly seeking to achieve external impacts". Incentives for prioritising impact among these competing demands are required.

Internal organisational structures, including operational processes, such as objectives and workload allocation, promotion and reward, and internal and external reporting need to be re-orientated around this new impact reality.

Reporting mechanisms and the way in which income streams are coded and HEIs go about their internal financial accounting could have adverse motivational effects. For example, is knowledge exchange income classified as services equally valued alongside research income in reward and promotion processes? The DESCRIBE expert workshop generated the suggestion that impact-related competencies and achievements should be integrated within recruitment and promotion processes and specifically, that staff should be encouraged to develop and maintain a 'reinvented' academic CV which captures these successes.

## Conclusions and recommendations

The project has highlighted the nature of the challenges facing institutions in responding to the impact agenda. The challenges are varied, and the more commonly cited examples include: the need to gain cultural acceptance at organisational and department/college levels within HEIs; the need for appropriate skills and knowledge, and crucially, where and with whom this resides; and finally, issues concerning both process and structural support. In each case, it is worth stating that that these challenges encompass both the capture and provision of information about research, in order to enable its use, plus the capture and reporting of information about the ensuing impact. As noted by Ian M. Carter, in this think-piece, "*institutions' mechanisms need to address both elements, with the organisation ensuring that it is comfortable with the balance between them.*"

In light of this our recommendations are thus:

**Research Institutions:**

- To carry out a thorough audit of all RCUK-funded projects with Pathways to Impact plans and associated funding, to ensure that the impact of each project is maximised, best practice shared, and efficiencies gained.

- To consider how to integrate IT and CRM systems which may well have been developed originally for discrete activities, for example, Technology Transfer, Business Relations and Alumni Relations, and which could now be integrated to serve the impact agenda.

- To provide incentives, including through the strategic allocation of QR funding and provision of dedicated resource, to enable academics to systematically record their impacts and be supported in articulating key findings.

**Research Enablers:**

- To consider how to best integrate professional training and skills development within core competencies and whether regional or national groupings would benefit the sector.

# 6. IMPACT INFORMATION MANAGEMENT SYSTEMS

## Introduction

Conversations about impact turn reasonably quickly to the issue of systems, and more specifically how technological systems can help with the collection, storage and interrogation of information about research dissemination and use, and its ensuing impact. As there is often a long time lag between research dissemination and impact, information systems – technological or otherwise – are crucial in providing a 'corporate memory' on the one hand, and a rapid way to report on impacts arising from projects on the other.

However, it is not known how many, if any, institutional CRIS systems collect impact-related information but a review of extant approaches by the "Learning from Law" project led by Oxford Brookes University - part of the Jisc funded Embedding Impact Analysis programme - concluded that "development of 'impact analysis techniques' was still at an early stage and there was no appropriate 'off-the-peg' system available to help impact recording and analysis" (Kelly, 2012). This is a key finding which sets the parameters for this chapter.

The DESCRIBE project uncovered examples of mature, developing and/or innovative information systems; elicited different views on how systems could respond the challenge of providing evidence of research use and impact; and identified some of the challenges and opportunities in taking the agenda forward. These developments and issues were introduced in the DESCRIBE literature review and explored more fully in the 'thinks piece' on impact information management systems[19] written by Simon Waddington from King's College London. This section attempts to synthesise the key points from this work as well as those arising from our conversations with stakeholders during in-depth interviews and our DESCRIBE expert workshop.

## Current information management systems

Standards are an important feature of both systems and systems development as they enable information to be shared and compared across systems. This is particularly important in terms of capitalising on interoperability – the ability of different systems to 'talk-to' and draw-from one another. Within the EU, standards for research information management have been sought by the European Commission through the development and promotion of the CERIF international standard data model for research information systems though euroCRIS. While CERIF is not the only standard data model for research information internationally[20], it is being championed in the UK by Jisc among others, and many institutional and funder research systems (or Current Research Information Systems, CRIS) are CERIF compliant. The underpinning framework of CERIF is similar to the HELIOS model illustrated in Figure 1.

The think-piece identified three levels of systems operating in the UK:

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19 The deep dive draws from a study out in the first part of a Jisc-funded UKROSS project that aims to 'investigate the potential for harmonisation of the reporting of research information at t national level with the UK Higher Education sector, based on adoption of the CERIF standard.
20 VIVO and CASRAI have emerged 'as potentially overlapping standard activities' in North America (Waddington, 2013).

- *Institutional CRIS systems*[21]: around 30 per cent of HEIs have a CERIF-compliant CRIS system, or have firm plans to implement one. Mostly, these are commercial systems with the most popular being: Pure from Atira, Converis from Avedas and Elements from Symplectic. Additionally, there is also code for DSpace developed by Hong Kong University and the ePrints repository has a plug-in which provides some features of a CRIS.

- *Funder CRIS systems*: Research funders have implemented systems for capture of research outputs and impact information. Five of the RCUK members[22] have adopted the Research Outputs System (ROS) while two have adopted a system called Researchfish (previously called "e-Val").

- *National CRIS systems*: Each of the RCUK funders maintains a separate public portal providing information about funded research, including outputs and impact information known as "Grants on the Web". In addition, the Department for Business and Skills (BIS) is funding an initiative called 'Gateway to Research" that will provide a single portal to access UK research outputs. This development is envisaged as being one of the "major drivers to harmonise research information that is collected by research councils, since information harvested from ROS and Researchfish needed to be normalised into a single format".

At an institutional level in the UK, as Frances Buck, Director of Researchfish puts it "Robust online outcomes systems are helping to consistently and comprehensively track a broad range of research outputs - directly demonstrating value for money and saving crucial time on reporting so greater focus can be placed on actual research". The extent to which this is true remains to be seen, but it is clear that academics funded by the ESRC, AHRC, BBSRC, NERC and EPSRC are obliged to report on the outcomes and impacts of their projects through the Research Outcomes System or 'ROS'. The challenge, of course, for the sector, and arguably of key importance from the academics' perspective, is to preferably have a single system where data can be entered or harvested, which meets multiple demands and uses or reuses according to need. It should also be possible for existing data to be uploaded from Research Organisations' own research information systems and for Research Organisations to generate or request reports across their grant portfolio.

Three of the Embedding Impact projects developed impact systems or repositories: the Embedding Research Impact at Coventry[23] (ERIC) project; the Disseminating Impact from Engagement with User Groups and Organisations[24] (DIEGO) project; and the Learning from Law[25] project. In each case, the systems were designed to complement or be integrated within existing research management systems.

- The ERIC project developed an impact extension to an existing applied research management system called BIDS (Everall and Hilton, 2012). The system records impact-related information through the provision of drop down lists capturing impact area (*i.e* discipline), impact level (*e.g.* individual specific group, strategic, business and

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[21] Features and functionality of commercial CRIS systems include:
[22] AHRC, BBSRC, EPSRC, ESRC and NERC.
[23] http://repository.jisc.ac.uk/5110/
[24] http://repository.jisc.ac.uk/5017/
[25] http://repository.jisc.ac.uk/5112/

commerce) and impact types (source of categorisation unknown); and a narrative description box. A menu of evidence types are also provided for selection.

- The DIEGO project extended an established open source technology called Dspace (Fleming, Lunt and Morton, 2012). The project's final report contains a metadata scheme outlining options for metadata fields. This includes fields to describe the evidence of impact and the pathways leading to the evidence and a description of the impacts arising. As these are top-tier headings it is not possible to identify the measures or indicators that have, or will, inform the systems. The system was informed by the Contribution Analysis approach to evaluating research impact.

- The "Learning from Law" *Impact Analysis System* developed by Oxford Brookes University was created using Excel (Brown and Kelly, 2012). The system allows researchers to record details of dissemination activity within three classification of impact pathways: presentations; networks and media and other; and within an 'outcome and incomes' tab record: a narrative describing the impact; classification of impact according to impact type using the REF classification; classification of impact according to research use type (conceptual, instrumental or capacity building); and further fields for narrative detailing known or specific linkages or pathways, other contributory linkages or pathways, context; and any other comments.

Unfortunately only the "Learning from Law" report provided details of the taxonomies of impact used to underpin the systems so it not possible to comment on the semantics of impact. Several lessons emerged from the programme (NCCPE, unpublished report):

- Systems should be promoted in terms of their direct use for funding activities, individual performance reviews, workload reduction and improving professional reputations.

- They should help users plan for impact from the start of a project, generate timely reminders and prompts, and allow for the addition of impact data long after the funding period.

- They should be flexible enough, enabling the user full control over the impacts that they would like to log, capturing a range of data relating to impacts and outcomes that a study has generated (*i.e.* improved well-being, jobs secured, participants engaged with…)

- The structure of the system should allow for cross faculty/discipline research projects, utilising tagging and providing a formal structure only at the highest level.

While systems were a key focus of the programme the synthesis report naturally emphasises the importance of people and culture in embedding impact analysis in research. In particular, it highlighted the value of bringing together multi-skilled teams that blended the expertise of researchers, research information management experts, and specialists in business and community engagement and evaluation in building 'impact literacy' (NCCPE, 2013).

The systems developed as part of the Embedding Impact project required manual upload of information. Confirming this, Waddington (2013) also noted that "many institutions still rely on manual upload publications, a process which can be largely automated through the use of bibliometric services and open access repositories". Automated sources of research impact information include: downloads of research papers; social networking tools; and web-

based dissemination of research such as blogs, software and datasets; and altmetrics (see the methods section for a discussion about altmetrics).

## Challenges to impact assessment

*"Gathering research impact information is a challenging activity due to the length of time with which data needs to be captured and the difficulty of representing the information is a systematic way that lends itself to analysis and benchmarking."*
Waddington (2013)

Other challenges identified within the think-piece were (Waddington, 2013):

### Cost

The cost of reporting research information generally, and of impact specifically, is significant. This includes the cost associated with purchasing (or designing) and maintaining institutional systems as well as the resources devoted to administering, collecting, inputting, and verifying data required to populate funder systems. For example, the HESA Information Landscape project compiled a catalogue of over 550 distinct requests for information covering teaching and research[26]. Ideally, information requests need to be converged in order to minimise the financial and administrative burden.

### System landscape

The system landscape for research information management is clearly complex and it is far from clear how requirements for information about research impact can optimally be accommodated within this space. In simple infrastructure development contexts one could conceive of a process of system specification built through understanding of information use and accompanying standards for indicator definition and methods of data capture but the research impact context is complex. Solutions need to complement the existing technical infrastructure (for example, institution-wide research management systems), accommodate reporting requirements from different funders and build on standards in impact definitions and data gathering as they emerge.  While an integrated, fully-planned system or systems, is obviously desirable, the 'analytics' approach may be a useful interim solution. DESCRIBE has nevertheless found that there is a clear preference for choosing the 'right tool for the right job' in terms of the relations between particular systems approaches and the various impact assessment methods. However, this needs to be carried out on a bespoke basis which resists an overly-prescribed formula to determine which tool to use at any one time.

### Harmonisation and interoperability

As Waddington observes, "there is a clear lack of harmonisation between the information requests made to institutions by external organisations". Two issues are at play here: firstly, there is a need for "harmonisation so where common information fields are required by multiple external organisations, they should as far as possible be aligned, to avoid duplicate information collection." As one interviewee volunteered, "fragmented data is worthless"; and secondly, where "the same information fields are collected, the semantics of the information request should be the same, so that information can be exchanged and reused".

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[26] HESA website accessed 16 May 2013
http://www.hefce.ac.uk/about/intro/wip/rpg/redesigningthedatalandscape/#d.en.75428

The latter issue is a definitional and methodological challenge of major significance; in particular for impacts that materialise at the furthest reaches of the impact journey (see Chapter 3). For example, while we have internationally agreed conventions for defining 'unemployment' (ONS website[27] accessed 7th May 2013) comparisons can only be drawn between countries if the instrument for gathering the data - in this case survey methods - are also comparable. This would require standards not only for the definition of impacts but also in methodologies for collecting evidence of impact. However, it could well be the case that a consistent vocabulary and coordinated approach would enable a degree of semantic interoperability between evidence which was collected using different methodologies.

While CERIF provides a model for representing the relationships between research entities it does not offer 'precise semantics' (Waddington, 2013). Semantic dictionaries are, however, being developed by CASRAI and euroCRIS and definitions of identifiers is also a crucial part of the work in projects such as ORCiD[28], CrossRef[29] and FundRef[30].

## Data quality

It is a truism to say that ensuring data quality is a major issue within information management systems. Partly, this can be addressed by agreeing and imposing standards in indicator design and data capture methods but user-friendly, intuitive system designs and effective incentives to encourage researchers and/or administrators to enter information are also important in maintaining quality and completeness of the data. In this regard, good practice might include the ability for impact information systems to generate automated CVs and web profiles; have the general facility for researchers to extract and reuse the information they have submitted; and reduce the data entry burden by drawing information from other sources (for example, citification etc.).

Contributors at the Expert Workshop made a number of practical suggestions to improve the quality of impact information collection. These included the timely completion of "impact diaries" or the use of virtual "impact boxes" to record details of dissemination activities, and evidence of research 'use' and impact and were reported to have achieved varying degrees of success at a local level.

## Traceability and attribution

The major challenge in capturing information about research impact is the around the traceability of impacts and their attribution to specific pieces of research. As has been acknowledged elsewhere in this report impacts can take many years to materialise and it may not be obvious at the time of publication and dissemination of research what these impacts may be or where they may materialise (or be observed). Metrics take time to understand and data quality can be poor, making it difficult to establish a robust causal link between research and impact. Indeed, final impacts may be realised long after the producer of the research has left the organisation. Thus, there are questions about who should be

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[27] http://www.statistics.gov.uk/hub/labour-market/people-not-in-work/unemployment/index.html
[28] ORCID is "an open, non-profit, community-based effort to create and maintain a registry of unique researcher identifiers and a transparent method of linking research activities and outputs to these identifiers". http://orcid.org/
[29] CrossREF is "an infrastructure for linking citations across publishers, and the only full-scale implementation of the Digital Object Identifier (or DOI) System to date". http://www.crossref.org/
[30] FundRef is "a collaborative project of scholarly publishers and funding agencies, facilitated by CrossRef, to provide a standard way of reporting funding sources for published scholarly research" http://www.crossref.org/fundref/

responsible for maintaining the database; and what processes or procedures are put in place to identify impacts. Systems also need to be flexible in order to accommodate unexpected or novel impacts; not every impact can be defined in advance and certainly some will easily be expressed in metrics. Systems need to allow a story to develop over time, and for linkages to be made between the various stages of the impact journey; they need to have at their foundation, a strong conceptual framework about how impact happens – which this report has suggested could be based on the notion of Impact as a journey. Or as one project interviewee suggests:

> *"developing systems which focus on recording impact information alone will not provide all that is required to link research to ensuing events and impacts, systems require the capacity to capture any interactions between researchers, the institution and external stakeholders and link these with research findings and outputs or interim impacts to provide a network of data."*

## Future development and trends

The systems think-piece author identified three clear trends emerging in this field (Waddington, 2013):

- An increasingly wide deployment of CERIF-compliant CRIS systems within both institutions and funders across the sector. We expect this trend to continue, particularly within larger research-oriented institutions. There remains a significant gap in the market for scalable solutions for smaller institutions.

- Increasing harmonisation in the information requests made to institutions from external bodies. This includes requests made by HEFCE and research funders around the research. This is both a political as well as a technical issue. Although progress here is likely to be slow, unification around a core set of information fields seems to be a realistic goal in the short to medium term. There would appear to be a role for extending the remit of the HE Data and Information Improvement Programme (HEDIIP) to include streamlining data and information collection and dissemination of research impact related data as well as student data.

- Increasing progress to standardise semantic dictionaries and to provide global identifiers. ORCiD is on the verge of adoption, which would already be a major advance, and enable researchers to be unambiguously identified. CrossRef, euroCRIS and CASRAI are working towards a full interoperability of CERIF through agreed data dictionaries and identifiers. Gateway to Research is also proving to be a major driver within the UK. There still remain major gaps such as agreeing common definitions of institutional structures.

Given these trends, Waddington argues it is "reasonable to expect an increase in the volume of research information that can be exchanged and reused. This will lead to an increase in tools to exploit such information. There is a large appetite within the sector of business intelligence and management tools, including benchmarking. There is a potential for more sophisticated research impact measures that can mine information gathered across traditional research boundaries, as well as historical data."

The potential for an alternative approach to systems was introduced by a DESCRIBE steering group member as a provocation at the Expert Workshop: they theorise that we

should start with the data and see what categories "drop out" from it in a similar way to the project on research metrics[31]. This "analytics" approach is about "harvesting the data exhaust left by users of any IT system, and putting it to good use". Examples include information collected about customer purchases when "reward cards" are used, or Facebook. The approach may have utility within research impact assessment. For example,

- Harvesting data from online diaries and calendars about contacts between researchers and outside agencies/bodies

- Holding research publications locally, in repositories and to track downloads.

This would provide researchers with information about the impact of their work with minimal effort. Participants of the workshop were further invited to debate the proposition that the sector should act "more like TESCO's in generating its own intelligence". There was general agreement, in principle, that collecting data in a "low burden and ethical way" was desirable but that there were concerns about a central entity collecting, storing and disseminating the data. These concerns were related partly to ethics and privacy and whether researchers would be comfortable storing, for example, information about commercial contracts or contacts, within a central system. It was felt that a system that allowed researchers to essentially "be their own TESCOs" and the custodian of their own data might be more palatable (at an individual or team level). Some participants expressed a degree of anxiety about the nature of information collected and how it was used. A distinction was drawn between the TESCOs approach – which was seen to accrue "blunt data" (*i.e.* what you buy) and the Facebook approach – which seemed to try to "get underneath you" (*i.e.* what you do or say, and who you speak to). There is no model or example of good practice to demonstrate just how this might work at the moment.

## Conclusions and recommendations

This chapter has explored how technological systems can help with the collection, storage and interrogation of information about research dissemination and use, and its ensuing impact. It has also explored some of challenges in realising this potential. These are mainly concerned with cost, the complex existing system landscape, harmonisation and interoperability, data quality and traceability and attribution.

There is currently no 'off-the-peg' system available to help impact recording and analysis so institutions wishing to establish formal IT-based systems for doing so, must currently commission bespoke systems or build their own, either as stand-alone but interoperable (*i.e.* CERIF compliant) systems or extensions to existing systems such as those used for Research Management, Research and Knowledge Transfer and Human Resources. It is not known exactly what approaches are currently being adopted across research institutions in the UK and on what scale. The chapter highlights some practical lessons that have emerged from the "Embedding Impact" projects that will help institutions wishing to develop and embed impact systems.

In order to foster use, impact systems need to be as 'light touch' as possible with minimal manual upload of information. This requires interoperability with institutional systems and bibliometric and open access repositories to automatically upload details about researchers, projects and publications. Sophisticated impact systems would also ideally draw upon

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[31] See snowballmetrics.com

automated sources of research impact information such as downloads of research papers, social networking tools, altmetrics and web-based dissemination of research (*e.g.* blogs, software and datasets). Systems would also need to be interoperable with funder CRIS systems.

Our interviews highlighted a concern in some quarters – both nationally and internationally - that conversations focussed on technology prematurely; and that the wider debate about "What do we need to know?" still needed to be developed. There was a sense that the community had yet to reach consensus about what was needed.

Our recommendations with respect to systems are thus:

**Research institutions:**

- Need to take an early view on how they encourage and incentivise compliance with ROS and Researchfish and how their local CRIS systems are configured to minimise the burden of capturing information on research impact. They should also reflect on who within the institution should upload this information into the systems.

- The automatic generation of CVs could potentially offer one way of incentivising researchers to maintain IT-based records of impact. Other suggestions for capturing records of impact include the completion of "impact diaries" or the use of virtual "impact boxes" to record details of dissemination activities, and evidence of research "use" and impact.

**Research funders**

- Need to keep under review the quality and usefulness of the impact data that is collected by HEIs and maintain good communication with these institutions to ensure that opportunities for greater harmonisation between systems are realised.

**Research enablers**

- Jisc should maintain a watching brief on the potential of emergent systems and provide essential thought leadership on systems as the impact agenda matures. It should lead thinking on semantic interoperability to capture evidence of impact.

- Opportunities to engage the fledgling Higher Education Data and Information Improvement Programme (HEDIIP) in streamlining of data and information collection and dissemination should be explored.

# 7. CONCLUSIONS AND NEXT STEPS

The DESCRIBE project drew upon a substantial evidence base to make a series of strategic and practical recommendations to help the higher education community consider how they can respond to the impact agenda. The project found that there is no 'magic bullet' for assessing research impact: no single universally agreed methodology for how impact should be assessed, evaluated, or evidenced, or how it is generated and maximised.

The DESCRIBE project was a relatively short, time-delimitated project which ran during a period of rapid developments in the sector occasioned by the Finch Report into Open Access, and was marked by the intensification of planning for REF 2014 by UK HEIs within the context of an increasingly challenging outlook for the UK economy. Our recommendations are therefore a product of this environment.

The nature of a potentially volatile, and financially austere environment for HE has contributed both to the importance of needing clear recommendations as well as to a pragmatic approach which needs to accommodate different priorities for institutions. For example, whilst certain recommendations concerning systems and the 'internationalisation' of impact have ardent supporters it is also clear both conceptually as well as practically that there will be a broad spectrum of uptake in these areas. Other areas, for example, embedding skills and implementing clear incentives with HR structures, will be more readily adopted.

The project was designed to look beyond the immediate concerns of the Research Excellence Framework and the UK context to present a vision for the sector post REF2014. The vision is of a sector:

- that is comfortable with impact related concepts and definitions ('impact literacy') and how impact is played out across disciplines, with universities embracing the agenda with clear purpose and direction;

- where impact is embedded into researchers' professional identities and how they practice excellent research, with deeper professional engagement;

- where the institutional management structures, processes and systems are fit-for-purpose and where university culture values expertise, encouraging teams to work together within and across universities promoting engaged and reflective practice; and

- where light-touch assessment technology, making full use of cyber tools and common information frameworks, creates value to researchers rather than an added administrative burden.

Our recommendations contain some practical steps that will help realise this vision whilst respecting the independence and individual priorities which will attend individual HEIs, Research funders and enablers.

## The future of impact

- Judgement-orientated evaluations as such should not become the 'only game in town'. There is considerable scope to improve our understanding about what works in

achieving impact, and develop more sophisticated data collection methodologies through the commissioning of improvement or knowledge-orientated evaluations.

- Accounting for impact retrospectively, as for REF2014, is problematic as the theories and practice of co-production and evaluation tell us that these endeavours are most effective when designed into the research process. The challenge for universities immediately post-REF2014 is to identify candidates for REF2020 (potentially case studies that were not selected for REF2014 due to the immaturity of their impacts) and to develop strategies to exploit and evidence impact early.

- Any inflation of current expectations for evaluation information needs to be matched with the capacity and capability of the sector to respond. The expectations of funders in relation to the capture of evidence at the level of individual research project or programme, in particular, needs to be carefully managed and is, perhaps, the area with most potential for 'expectation drift'. Moves to 'close down' impact metrics at this level of analysis could be resisted.

- Future research programmes should effectively commission impact at the project specification stage and provide sufficient resources for research dissemination and interpretation and the subsequent capture of evaluation evidence.

- There is a clear appetite for detailed work both within specific disciplinary communities, such as the creative sector, as well as from a 'science of science' viewpoint for thorough on-going research into the most appropriate methodologies for assessing impact and providing policy makers and funding agencies with 'better' evidence as to how their investments can generate desired impacts. This should include consideration of the estimation of the counterfactual.

# APPENDIX A: STEERING GROUP MEMBERS

Steering Group Chair

Geoff Rodgers                      Brunel University


Members

David Baker                        CASRAI

David Docherty                     CIHE

Rosa Fernandez                     Department for Business, Innovation and Skills

Sean Fielding                      University of Exeter

Phil Graham                        Queen's University Belfast

Julia Lane                         American Institutes for Research

Kimberley Hackett                  HEFCE

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DESCRIBE Team

Michael Wykes                      DESCRIBE Project Director, University of Exeter

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Hilary Stevens                     DESCRIBE Project Manager, University of Exeter

Karin James                        DESCRIBE Administrator, University of Exeter

# APPENDIX B:    CONFERENCE PROGRAMME

**FUTURE OF IMPACT CONFERENCE AGENDA & PRESENTATIONS**

*Event Chair: Aaron Porter, Education Consultant*

09.30    Registrations and Refreshments

10.00    **Welcome**                                                                          **Main Hall**
Rachel Bruce, Innovation Director for Digital Infrastructure at Jisc

10:05    **Introduction to the findings of the DESCRIBE Project**
Dr Michael Wykes, Policy, Impact, and Performance Manager, University of Exeter

**PLENARY 1 – THE STRATEGIC CASE FOR IMPACT**                    **Main Hall**
10:20    **Keynote**
Nicola Dandridge, Chief Executive, Universities UK

10:40    **Responses and Panel Discussion**
Nicola Dandridge, Chief Executive, Universities UK
Professor Geoff J Rodgers, Pro-Vice-Chancellor (Research), Brunel University
Professor David Cope, Director, the Parliamentary Office of Science and Technology
Rachel Bruce – Innovation Director for Digital Infrastructure at Jisc

11:30    Refreshments and Opportunity for Networking                    **Tavistock Room**

**PLENARY 2 – THE IMPACT JOURNEY**                                      **Main Hall**
11:50    **Brief presentations followed by Q&A**
Dr Averil Horton, Head of Business Development and Innovation, Brunel University
Paul Manners, National Coordinating Centre for Public Engagement
Dr Sarah Morton, University of Edinburgh

12:35    Lunch and Opportunity for Networking                            **Tavistock Room**

**PLENARY 3 – THE INTERNATIONAL CONTEXT FOR ASSESSING IMPACT**    **Main Hall**
13:20    **Keynote**
David Sweeney, Director (Research, Innovation and Skills), HEFCE

13.40    **Responses and Panel Discussion**
Anke Reinhardt, Director of Evaluation and Monitoring, German Research Council
Professor Julia Lane, Senior Managing Economist at American Institute for Research
David Sweeney, Director (Research, Innovation and Skills), HEFCE

**INTERACTIVE SESSIONS**

14:30 and 15:30                                                              **Main Hall**
**Workshop A. Methodologies and Evidence of Impact**

*Discussants*
Dr Rosa Fernandez, BIS
Dr Molly Morgan Jones, RAND Europe
Professor Julia Lane, American Institute for Research


14:30 and 15:30                                                              **Tavistock Room**

### Workshop B. The Impact of 'Impact' in Higher Education
*Discussants*
Dr Rosa Scoble, Brunel University
Dr Ian Carter, University of Sussex
Dr Philip Graham, Queens University Belfast


14:30 and 15:30                                                              **Meeting Room 1+2**

### Workshop C. Impact Systems
*Discussants*
David Baker, CASRAI
Dr Simon Waddington, King's College London
Dr Keith Jeffery, euroCRIS


14:30 and 15:30                                                              **UUK Boardroom**

### Workshop D. Business and Community Engagement
*Discussants*
Simon Whittemore, Jisc
Paul Manners, National Coordinating Centre for Public Engagement
Dr Sarah Morton, University of Edinburgh
Kent McClymont, University of Exeter
Dr Emily Brown, Oxford Brookes University & Ursula Kelly, Viewforth Consulting


15:30   Refreshments available in each Workshop area
16:30   End

# APPENDIX C: SEMI-STRUCTURED INTERVIEWS

As a key part of its consultation process, at an early stage in the DESCRIBE project an interview programme was set up: 1) to collect stakeholders' views on research impact from across sectors, and 2) to encourage their 'buy-in' and involvement in the project. Results and feedback from the interviews have been used to refine how impact is conceptualised and channel external experiences of practice into the upcoming REF process. The multi-sector approach ensures that a diversity of views can be taken into account, and by triangulating definitions identify the most appropriate and practical measures that can be implemented to capture higher education research impact.  Overall 32 interviews were achieved with respondents, which were conducted by five members of the DESCRIBE research team. The breakdown of sectors which contributed their own interpretations of impact to the DESCRIBE interviews was as follows:

- EU contacts (six interviews)

- Funding Councils (NERC, ESRC, BBSRC, MRC) and one Funding Body (Wellcome Trust) (five interviews)

- Academic (Russell Group) (six interviews)

- Academic (1994 Group) (two interviews)

- Other (British Library, National Coordinating Centre for Public Engagement, National Council of Voluntary Organisations, South West Forum, NESTA, private sector) (six interviews)

- Government (BIS, Council for Industry and Higher Education) (two interviews)

- Research (HEFCE, UK Research Office) (five interviews)

For the interviews the DESCRIBE project has been fortunate to be able to access a select group of high-level research experts from across the United Kingdom and Europe. Most interview respondents are active in policy development in national as well as international contexts. This has acted to elevate the interview discourse to the level of a strategic and academic debate, and gives an overview of existing structures and frameworks to capture research impact. A few notes of caution should be sounded. Although they exhibit some commonality, responses are not altogether homogeneous even within one sector of practice. With such a small sample from each sector, interviews reflect individuals' perspectives rather than those of a research community. The feedback below does not represent the full spectrum of views of research impact analysis in higher education, and respective weighting of responses should be considered in light of the number of interviewees responding from each sector.

Interview questions were developed during the initial months of the DESCRIBE project and related to the following broad themes:

- Understanding impact

- Current methods of impact assessment

- Measuring and evidencing impact

- Enhancing impact

- Reporting impact

- Ensuring consistency

Interview questions were very detailed and tightly focused. It was discernible that many covered existing individual institutions' priorities and procedures for managing research impact. The interviews themselves, however, constitute the broad and strategic level views of national policy makers and experts, and responses are semi-structured and discursive in nature.

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