

Impact Data Recording Challenges for CDTs and Research Projects Resulting from the RCUK Research Outcomes Harmonisation Project

KOLOLA Limited, August 2014

Abstract

Projects funded by RCUK, including Centres for Doctoral Training (CDTs) are required to report on their outcomes and impact. The RCUK Research Outcomes Harmonisation project is changing the way that this reporting takes place and introducing a common set of criteria across all seven UK research councils.

These changes have implications for CDTs that will make the collection of activity, outcome and impact data a more pressing concern. In this whitepaper, we outline these changes and identify five key challenges that an activity, outcome and impact management system should support: aggregation, temporality, consistency, user engagement and data heterogeneity.

Finally, we explain the approaches to tackling these challenges that we adopted in KOLOLA, an online activity, outcome and impact management system designed for CDTs and other academic research projects.

Introduction

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Centres for Doctoral Training (CDTs) were conceived as a strategic mechanism designed to facilitate and promote multi-disciplinary research activity with the goal of training PhD students with enhanced team-working and problem-solving skills [1]. The success of the initial CDTs led to their widespread adoption in universities across the UK, with the former Minister for Universities and Science, David Willetts, announcing funding through the Engineering and Physical Sciences Research Council (EPSRC) for over 90 new CDTs, which will intake their first cohorts of PhD students from September 2014 onwards [3,9].

Like all research council funded research projects, CDTs are subject to regular review periods by their funders. As part of this process, CDTs are required to collect and produce detailed information about their academic, societal and economic impact to their funding council. For the majority of research councils (including EPSRC and ESRC) this data was previously uploaded and submitted through the Research Outcomes System (ROS).

Research Councils UK (RCUK) have recently announced that several changes will be made to the way that impact is reported from September 2014, as a result of the ongoing Research Outcomes Harmonisation Project [7]. The project seeks to standardise the way that impact is reported by research projects across all seven UK research councils, with the intention of increasing reporting efficiency (particularly for multidisciplinary research projects with joint funding) and to make the outputs of funding from different research councils more directly comparable.

This whitepaper will outline the proposed changes to outcome reporting resulting from the harmonisation project and discuss 5 key challenges that research projects and CDTs will need to tackle as a result of those changes: aggregation, temporality, consistency, user engagement and data heterogeneity. This paper then presents how the activity, outcome and impact recording system, KOLOLA, can help a CDT to address these challenge areas and capture high quality data for submission to RCUK. Finally, we provide an overview of other advantages of the KOLOLA approach; including how it can provide a mechanism for PhD students to acquire impact management skills, allow managers to monitor impact generation and provide support at the individual level, and support other diverse activities such as marketing and assessing student development and engagement.

What is impact?

What do research councils mean by the term 'impact'?

RCUK [5] provides a broad definition of impact, describing it as “a demonstrable contribution that excellent research makes” divided between either academic, economic or societal advances. The impact framework developed as part of the Digital Economy Impact Review (Fig 1) shows just how broad a range of different research activities can potentially contribute to the generation of impact across a research project or CDT.

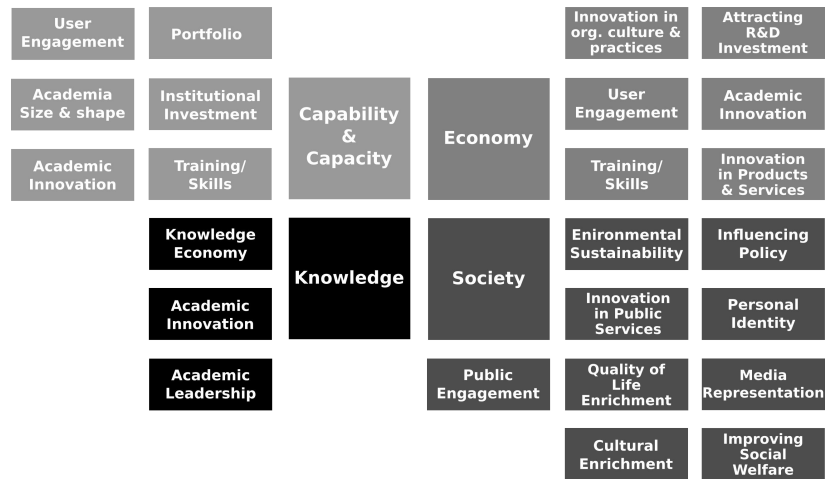


Fig 1 - Adaptation of the Digital Economy impact framework

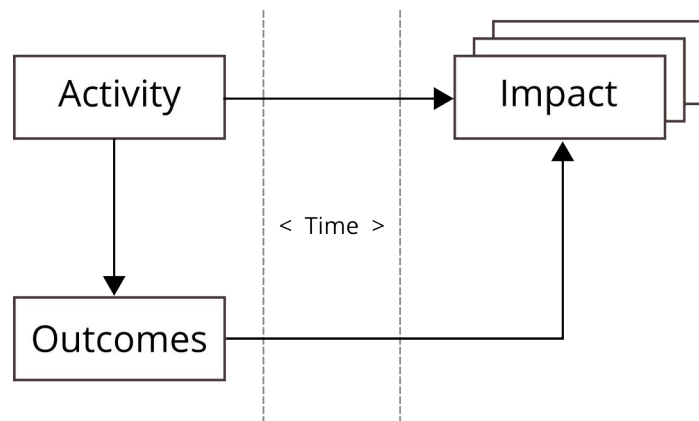


Fig 2 - Activity underlies the generation of both outcomes and impact

Impact itself can be produced through two distinct mechanisms - activity and outcomes (Fig 2). Activity comprises events, processes or actions that researchers and PhD students carry out (such as seminars, skills training, public outreach, or industry involvement). An outcome is a tangible output derived as the result of activity (for instance, published papers, partnerships or intellectual property) and are typically much easier to quantify and measure than activity.

The extent to which activity and outcomes must be recorded varies between projects, but some mixture of the two is usually unavoidable. For a project such as a CDT, activity can comprise a large part of the total impact, often with no direct outcome. Examples of this include team and cohort building events, or seminars and industry engagement, none of which necessarily result in a conventional research outcome such as a publication despite being an integral component of a CDT and worthy of recognition.

Why does impact matter?

Because of this, impact can only be comprehensively reported on across a research project or CDT if both activity and outcomes are recorded. However, as Fig 1 illustrates, substantial data would need to be collected to adequately capture the impact generated by the breadth of activity and outcomes which take place across a CDT.

The primary investigator faces a challenge in collating all the information and data required to produce an impact report. Research Projects, and CDTs in particular, do not typically utilise the command-and-control management structure common in other organisations, whereby the manager has full responsibility and awareness of the activity being conducted by the people that they are responsible for. Instead, individual PhD students and researchers in a research project have a substantial degree of autonomy in their research and activity and responsibility for their own progress, with no direct responsibility to provide detailed reports to a central manager on a regular basis. This distributed accountability, while supporting creativity and the vibrant culture within academia, does present unique challenges to a research project or CDT in terms of aggregating activity and outcome data.

Why is recording impact important for research projects?

Impact plays an important role within academia. The ability for researchers to be able to articulate the benefits and value of their work to a wide range of stakeholders, particularly the UK government and general public, plays a vital role in securing funding for the sector.

As a reflection of the growing importance of impact to funders, researchers applying for research council funding must complete a Pathways to Impact document as part of their application. The goal of this document is to ensure that funded projects are able to demonstrate a plan to generate academic, societal and economic impact at all stages of their life cycle.

In the past, CDTs have been subject to regular review by their funding research council [6]. During these periods, the primary investigator was required to produce a report detailing the progress of their project, including the submission of data about publications, impact, project activity, as well as a variety of other measurable outcomes.

Maintaining a thorough record of activity, outcomes and impact across a CDT is important for many reasons. Firstly, this data can be useful for a variety of soft purposes, such as providing valuable evidence and materials for supporting student recruitment and marketing efforts. Secondly, if collected at a sufficiently granular scale, this data can also be useful for managers in tracking impact contributions and engagement by individual students. Finally, the recently announced outcomes of the ongoing RCUK Research Outcomes Harmonisation Project have confirmed that research councils will now expect research projects and CDTs to submit a greater volume of impact information through an updated impact assessment framework, which will be discussed further in the following section.

Impact Harmonisation

RCUK Impact Harmonisation Project

RCUK are currently in the process of a 'Research Outcomes Harmonisation Project' which aims to standardise the way research outcomes data is collected across all 7 UK research councils. Prior to this harmonisation, two different research outcome reporting systems were in use by different research councils, ROS and ResearchFish, with no standardised criteria for what was recorded. This disparity made it difficult to compare the outputs of like-for-like projects between different councils, as well as creating additional data reporting burdens for researchers engaged in multidisciplinary projects that had to report to multiple councils.

All seven research councils will adopt the ResearchFish system from September 2014 onwards, and data currently stored on ROS will be migrated to the new system. This move to a single reporting system will increase the commonality of data collected across all the research councils and represents a major step in addressing some of the issues created by the previous disparity.

A new, standardised Research Outcomes Common Question Set (previously referred to as the Common Data Model or CDM) will be implemented alongside the move to ResearchFish. For the first time ever, researchers will be asked to provide exactly the same core research outcomes data regardless of which of the research councils they report to. This development will facilitate the direct comparison of research outcomes from similar research projects between different councils and has the potential to reshape the landscape surrounding future refunding decisions.

More importantly for research projects and CDTs, when the new Research Outcomes Common Question Set is analysed more deeply it is apparent that an unprecedented level of detail will be required in the information they submit about their impact. For instance, through ROS, a CDT was only required to provide a 'summary of impact', which included producing a written report in plain English describing their key impacts to academic advances, society and the economy [2].

In comparison, the Research Outcomes Common Question Set requires a CDT to submit considerably more data. As with ROS, a CDT must still produce a written report about their impact. There are also several new sections for a CDT to complete, such as 'Engagement Activities', which requires the CDT to submit detailed information for every single applicable engagement activity carried out across the CDT (including detail such as attendance numbers, activity type, audience type and specific impacts produced), and 'Artistic and Creative Products' which requires detailed information on products such as films, images and creative writing (materials which may have been produced by a CDT for their marketing and PR for example) [8].

Over the course of several years, PhD students and researchers within a CDT could be taking part in hundreds of impact generating activities

between them. For a project as large as a CDT, the Research Outcomes Common Question Set will vastly expand the scope of the data they must capture and record in order to adequately submit data about their activity. This may present a very difficult challenge for CDTs because their activity is produced by a large number of largely self-directed individuals who will have varying levels of training and impact awareness.

The final component of the Research Outcomes Harmonisation Project is the launch of a new “gateway to impact” website. This is intended to provide the public and other stakeholders with quick and simple access to a wide variety of published funding and impact information about research council sponsored research projects. This contributes added pressure for researchers to record their impact, as this information will steadily be made more accessible for public scrutiny.

In summary, the RCUK Research Outcomes Harmonisation Project will have significant effects for CDTs and researchers. The move to a single research outcomes reporting system, ResearchFish, accompanied by the standardised Research Outcomes Common Question Set, will increase the commonality of data collected across all seven research councils and will make the outcomes of similar research projects more directly comparable. Coupled with the launch of the Gateway to Impact website, which will make research outcomes more publicly accessible, high quality activity and outcome data will play a larger part in routine project reporting and could play an increasingly prominent role in future refunding decisions. The adoption of the Research Outcomes Common Question Set will necessitate that CDTs collect significantly more information about their impact producing activity than was previously required through ROS, which could pose a difficult challenge for large projects such as CDTs.

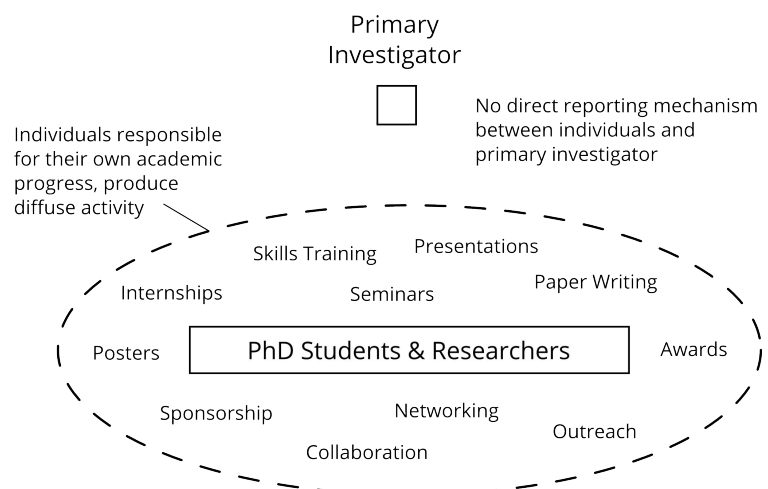


Fig 3 - Independent self-directed individuals, for instance PhD students in a CDT, create diffuse activity that can be hard for a PI to record

Recording challenges

Aggregation

Temporality

Challenges to recording impact

Measuring impact can be a burdensome task because it is intangible, can be slow to emerge and it may be manifest across a wide variety of different areas (economic, social and academic). Impact is, therefore, rarely measured directly, but instead its occurrence is often inferred as the result of either an activity or an outcome, which are both easier to measure (Fig 1). This was reflected through the data previously collected through ROS, and is again reflected in the data collected through the new Research Outcomes Common Question Set that will be used with ResearchFish from September 2014 onwards.

In order to be able to produce a high quality submission through ResearchFish, it will be essential for a CDT to routinely collect a wide range of data. Measuring outcomes, such as publications and intellectual property, is relatively easy to do in general because they tend to be intrinsically simple to count and quantify. However, measuring activity will be significantly more difficult because it can be generated by individuals that are responsible for their own progress and have no direct reporting mechanism with the primary investigator (Fig 3).

Taking all of this into account, we have identified five key challenges which will inhibit a CDT from recording a comprehensive and structured record of their impact:

Aggregation

CDTs need to be able to report on their impact at all scales, ranging from the granular level through to the project-wide level. As a result, it may sometimes be necessary for a CDT to aggregate together more granular data, in order to be able to infer impact at a larger scale. However, CDTs face a challenge in collecting data in a structured, standardised way which supports this aggregation. Individuals that have produced activity may record data in a variety of different ways, or may record information about an activity inconsistently or incompletely. Several individuals may also be responsible for generating the same activity, so further issues could be created if more than one person submits data about the same activity, leading to duplication of effort and poorly curated data.

Temporality

A well documented issue surrounding impact recording is that certain activities and outcomes can take as long as 10 years or more before impact emerges from them [4]. As an example, a PhD student may gain a new industry contact during a networking activity, then go on to contact them again several years later and secure a full-time job. There is clearly a link between the activity and the impact in this situation; yet the future impact could easily be misconstrued as a serendipitous occurrence to a casual observer who was not aware of the underlying context (i.e. how the student initially developed the contact), thus the connection between the activity and impact may go unrecorded.

Consistency

Engagement

Heterogeneous data

Recording solutions

Consistency

Subjectivity in the information that individuals will determine as important to record from an activity is another significant problem that can lead to inconsistency in data recording. Littlewood [4] argues that this issue is particularly pronounced in multi-disciplinary projects, whereby interpretations of impact can vary significantly across different disciplines. Because a CDT is made up of a large, often multidisciplinary group of students, varying interpretations of impact are likely to have an effect on the quality and consistency of impact data which is recorded across the group.

Engagement

Recording impact across a CDT can be hampered through poor user engagement with impact recording processes. Many traditional data collection methods, such as surveys, are often perceived to be 'black holes' for data with little to no return for the individual that invests time inputting. This is particularly true in a CDT where students have little stake in the project itself and are typically focussed on their own work. Every individual within a CDT can contribute to generating impact, so low engagement rates can lead to significant under-reporting of the true impact. An ideal system would allow the user to access their recorded data for their own purposes, motivating them to record impact continuously on an 'as it happens' basis. Even with such a system, 100% user engagement is unlikely and so mitigating the effects of unengaged individuals becomes another aspect of this challenge.

Heterogeneous Data

A single event can produce many types of data, including photos, videos, documents, links and personal reflections. However, capturing all of these different types of data can pose a significant challenge. A CDT may have several different mechanisms in place for capturing different types of impact data from the same event; a survey to collect feedback, an e-mail request or shared folder to collect photos from attendees or personal reflections or a 'dropbox'-like system to collect and store documents. Storing this data in different places, can lead to reduced accessibility (only CDT staff might have access to a shared folder for example) and make it difficult to collate these different media when required. These different collection mechanisms may also request the same individuals to submit data about a single event on multiple occasions, which can lead to duplication of effort and can reduce user participation rates. Manually curating and synchronising these disparate resources can be time consuming and error-prone.

Impact data recording solutions

Recording impact across a research project or CDT can be hampered by these challenges. Based on our own experiences of recording outcomes, activity and impact with a CDT we have developed a new data capture system that allows a CDT to directly address these challenges. KOLOLA provides a single platform for students and researchers to record impact data. The system can collect a diverse range of media, including photos, videos, links, feedback and

documents, as well as more typical quantitative and qualitative data from specific activities. Structured yes-no analysis guides users through the process of categorising activity and outcomes, minimising the level of training that is required and reducing the cognitive burden. Together, these features allow individuals to upload all of their data in a single location and in a format which is both structured and standardised. This helps to tackle consistency issues and facilitates the aggregation of impact data.

KOLOLA is designed to ensure that recording impact became an engaging, rewarding process for all participants. All students and researchers in a CDT are given their own KOLOLA profile and impact data they record is added to their own online record of achievement. Over time, this record can be used as evidence in appraisals, as well as to contribute to a wider personal record of achievement for the individual.

Users can record activity on behalf of others, avoiding duplication in the recording process, increasing accuracy and saving individuals considerable time. Users can explore the activity contributed by anybody within the cohort and contribute to the recording of each others' events. This makes the process of recording activity more social and interactive, helping to encourage participation and mitigating the effect of individuals that do not engage in the recording process. By involving everyone within the CDT in the impact recording process, a more comprehensive record of data can be built and there is a smaller chance of impact being missed and going unrecorded. By building a solid record of data, challenges such as the temporality of impact can be more successfully tackled.

KOLOLA provides a CDT with a subtle means of embedding impact management training into the routine of their everyday activity. The ability for a researcher to be able to look at their activity and think about the impact it could lead to is becoming an increasingly important skill, particularly for students that may go on to become academics and place their own bids for research council funding.

Supervisors can also review the impact record of their students, allowing recognition or further support to be allocated to individuals based on their requirements. Tracking the activity of individual students can help a CDT to ensure it is providing fair and equitable opportunities.

Finally, the data captured by KOLOLA can benefit everybody within a CDT. The primary investigator benefits from a rich collection of impact data which can be output in a format easily transferred to the ResearchFish system, saving them considerable time by obviating the need to process the data beforehand. KOLOLA also contains a suite of analytical tools which CDT managers can use to explore their impact dataset, helping to inform strategic decisions. The wide range of digital media which can be stored on KOLOLA, such as photos and videos, can also be used by the CDT to support marketing and PR activities.

Conclusion

Conclusion

Recent announcements made by RCUK through their ongoing Research Outcomes Harmonisation Project have highlighted a growing desire for the impact data that is collected from research projects to become standardised, publicly accessible and more directly comparable between similar projects. To support this, all seven UK research councils will begin to use the research outcomes reporting system, ResearchFish, from September 2014 onwards. This change will be accompanied by a new Research Outcomes Common Question Set, which will finally standardise the impact data that is collected.

The new question set will create challenges for CDTs because it requires them to submit detailed impact data on a significantly more granular, activity-by-activity basis. This will necessitate that CDTs collect much more information about their activity and impact than was previously required by ROS.

Research projects and CDTs inherently have distributed management structures, in which individuals are largely responsible for their own activity. This environment leads to five key challenges for a CDT seeking to capture data across individuals: aggregation, temporality, consistency, engagement and data heterogeneity.

KOLOLA provides a CDT with tools to directly address these challenges. KOLOLA allows individuals to record their own activity and build up a personal portfolio of achievements which provides incentive for engagement. KOLOLA also ensures data is collected in a standardised format, and is able to capture specific data based on the type of activity being uploaded. The system allows the CDT to track the activity of individuals, allowing them to provide support or recognition where required. Together, the features of the system can benefit people at all levels of a CDT.

About KOLOLA

Founded in 2013 by two PhD students who were frustrated by their own experiences of recording activity, outcomes and impact, KOLOLA provides impact, activity and outcome recording solutions to academia, business and the third sector.

Find out more about our products, including our free tier "KOLOLA light" at www.kolola.net

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