

## Case Study

## 4

## Research Data Management supporting Research Integrity and Open Science

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### 4.1. OVERVIEW

The purpose of this Case Study is to explore and anchor the concept of RDM in the landscape of research integrity. Once positioned in this space, it is then possible to develop ideas around RDM to support emerging agendas. One of the most important agenda items facing 21<sup>st</sup> century researchers is Open Science. This Case Study then looks at how RDM can contribute to the Open Science debate and to the benefits to Society that Open Science is said to bring.

### 4.2. RESEARCH INTEGRITY

All well-managed research performing organisations should have codes of conduct for research integrity, which are developed at institutional level and/or at national level.<sup>1</sup> These codes provide frameworks for best practice in research practice and conduct, establishing principles, guidelines or norms for the ethical, effective and legal conduct of research enquiry. By way of example, this Case Study looks at the framework for research integrity in place in UCL (University College London).<sup>2</sup>

UCL has a Statement on Research Integrity<sup>3</sup> and an accompanying Code of Conduct for Research.<sup>4</sup> The Statement on Research Integrity makes clear: 'It is the view of UCL that everyone involved with research has a joint responsibility for ensuring high standards of integrity throughout the research process, from the creation of methodology and data collection through to publication and authorship.'

The UCL Statement is itself grounded in UCL 2034<sup>5</sup>, the UCL institutional strategy. Principal Theme 1 of this strategy is 'Academic leadership grounded in intellectual excellence'. In 2012, Universities UK published the *Concordat to support research integrity* and the five commitments set out the UK's determination to maintain high standards of rigour and integrity in its research.<sup>6</sup>

'This concordat<sup>7</sup> seeks to provide a comprehensive national framework for good research conduct and its governance. As signatories to and supporters of the concordat to support research integrity, we are committed to:

<sup>1</sup> There is a European Code, developed by ALLEA and the European Science Foundation in 2011, a new version of which is to appear in spring 2017, and which serves as a reference document for EU-funded Horizon 2020 projects. See ALLEA: [http://www.allea.org/wp-content/uploads/2015/07/Code\\_Conduct\\_ResearchIntegrity.pdf](http://www.allea.org/wp-content/uploads/2015/07/Code_Conduct_ResearchIntegrity.pdf); last accessed 7 February 2017.

<sup>2</sup> Key documents and statements are laid out at UCL: <http://www.ucl.ac.uk/research/integrity/pdfs/integrity-at-ucl>; last accessed 8/1/17.

<sup>3</sup> UCL: <http://www.ucl.ac.uk/research/integrity/pdfs/UCL-Statement-On-Research-Integrity.pdf>; last accessed 8/1/17.

<sup>4</sup> UCL: <http://www.ucl.ac.uk/srs/governance-and-committees/resgov>; last accessed 8/1/17.

<sup>5</sup> UCL: <http://www.ucl.ac.uk/2034/>; last accessed 8/1/17.

<sup>6</sup> Universities UK (UUK): <http://www.universitiesuk.ac.uk/policy-and-analysis/reports/Pages/research-concordat.aspx>; last accessed 8/1/17.

<sup>7</sup> Universities UK: <http://www.universitiesuk.ac.uk/policy-and-analysis/reports/Documents/2012/the-concordat-to-support-research-integrity.pdf>; last accessed 8/1/17.

- maintaining the highest standards of rigour and integrity in all aspects of research
- ensuring that research is conducted according to appropriate ethical, legal and professional frameworks, obligations and standards
- supporting a research environment that is underpinned by a culture of integrity and based on good governance, best practice and support for the development of researchers
- using transparent, robust and fair processes to deal with allegations of research misconduct should they arise
- working together to strengthen the integrity of research and to reviewing progress regularly and openly'

UCL welcomed the 2012 *Concordat to Support Research Integrity* and agrees with the five commitments contained within. The four elements of integrity within the concordat, which UCL sees as Principles of Integrity, reflect UCL's existing Code of Conduct for Research. It is expected that all staff (including honorary staff), students, visitors and collaborators are aware of and adhere to both the Code of Conduct for Research and the Principles of Integrity as set out below (taken in their entirety from the concordat).<sup>8</sup>

- **Honesty** in all aspects of research, including in the presentation of research goals, intentions and findings; in reporting on research methods and procedures; in gathering data; in using and acknowledging the work of other researchers; and in conveying valid interpretations and making justifiable claims based on research findings.
- **Rigour**, in line with prevailing disciplinary norms and standards: in performing research and using appropriate methods; in adhering to an agreed protocol where appropriate; in drawing interpretations and conclusions from the research; and in communicating the results.
- **Transparency and open communication** in declaring conflicts of interest; in the reporting of research data collection methods; in the analysis and interpretation of data; in making research findings widely available, which includes sharing negative results as appropriate; and in presenting the work to other researchers and to the general public.
- **Care and respect** for all participants in and subjects of research, including humans, animals, the environment and cultural objects. Those engaged with research must also show care and respect for the stewardship of research and scholarship for future generations.

These statements and principles set the framework for the performance of research at UCL. The third of the principles from the UUK *Concordat* is important for the topics of Open Science and Research Data Management<sup>9</sup>. How can this principle be delivered? It is to this subject that this Case Study is devoted.

### 4.3. RESEARCH DATA MANAGEMENT AS A FEATURE OF OPEN SCIENCE

In February 2015, the European Commission published a Report entitled *Validation of the results of the public consultation on Science 2.0: Science in Transition*.<sup>10</sup> Inter alia, the Report looked at the barriers that researchers encounter in moving to Open Science approaches. The top two concerns,<sup>11</sup> which acted as barriers, were identified as:

- Concerns about quality assurance – 53% fully agreed that this was a barrier; 35% partially agreed
- Lack of credit-giving for Science 2.0 [Open Science] – 50% fully agreed, 38% partially agreed

The Report then looked at how these barriers could be removed, and the types of intervention that would be needed to do this. The answers to the questions of interest to this Case Study are given in Figure 4.1 below.<sup>12</sup> Comparison of the figures is interesting. There was not much interest amongst researchers in intervention in the metrics space. Concerns about the lack of Open Access to research publications and research data scored highly – in fact, this was the most significant total in the validation exercise.

Question/Issue	Need to Intervene
	Yes
Foster Open Science – raise awareness	52%
Traditional Metrics do not capture Open Science	22%
Develop research infrastructures	56%
OA to publications and data	63%

Figure 4.1: Agreement for Policy Actions [abbreviated] from 2015 EC Report on Science 2.0

The EC's validation exercise points to the realisation amongst researchers that there is a need to raise awareness of these issues, particularly around the issues of Open Access to publications and Open Research Data. How far has the research community travelled in attaining these goals? Again, the UK and UCL's work can act as a helpful example.

The UK has a well-established framework for mandating Open Access to publications. UCL Policy states that all publications should be deposited by the author in UCL Discovery<sup>13</sup> upon being accepted for publication, copyright permissions allowing. All papers intended for inclusion in REF 2020, the UK's national Research Evaluation Framework,<sup>14</sup> must be deposited within 3 months of acceptance. This is supplemented by funder mandates such as those from Research Councils UK<sup>15</sup> and the Wellcome Trust.<sup>16</sup>

For Research Data Management, the picture is much less clear. In July 2016, a group of research stakeholders issued a *Concordat on Open Research Data* – HEFCE, RCUK, Wellcome Trust and UUK. The purpose of this document is 'to ensure that the research data gathered and generated by members of the UK research community is made openly available for use by others wherever possible in a manner consistent with relevant legal, ethical, disciplinary and regulatory frameworks and norms, and with due regard to the costs involved.'<sup>17</sup> The *Concordat* sets out ten principles for Open Research Data, and these are highlighted below. The *Concordat* is important because it amplifies UCL's commitment in its Research Integrity frameworks to openness in collecting, analysing and reporting research data.

<sup>8</sup> UCL: <http://www.ucl.ac.uk/research/integrity/pdfs/UCL-Statement-On-Research-Integrity.pdf>; last accessed 8/1/17.

<sup>9</sup> The new European Code (see footnote 1) is also expected to include transparency and open communication.

<sup>10</sup> European Commission: [http://ec.europa.eu/research/consultations/science-2.0/science\\_2\\_0\\_final\\_report.pdf](http://ec.europa.eu/research/consultations/science-2.0/science_2_0_final_report.pdf); last accessed 8/1/17.

<sup>11</sup> *Ibid.*, p. 10.

<sup>12</sup> For the full set of results, see *ibid.*, p. 32.

<sup>13</sup> UCL: <http://discovery.ucl.ac.uk>; last accessed 8/1/17.

<sup>14</sup> Higher Education Funding Council for England (HEFCE): <http://www.hefce.ac.uk/rsrch/oa/Policy/>; last accessed 8.1.17; see also UCL: <http://www.ucl.ac.uk/library/open-access>; last accessed 8/1/17.

<sup>15</sup> Research Councils UK (RCUK): <http://www.rcuk.ac.uk/research/openaccess/>; last accessed 8/1/17.

<sup>16</sup> Wellcome Trust: <https://wellcome.ac.uk/funding/managing-grant/open-access-policy>; last accessed 8/1/17.

<sup>17</sup> HEFCE, RCUK, Wellcome Trust, UUK: <http://www.rcuk.ac.uk/documents/documents/concordatonopenresearchdata-pdf/>, [p. 1]; last accessed 8/1/17.

Number	Principle
1	Open access to research data is an enabler of high quality research, a facilitator of innovation and safeguards good research practice
2	There are sound reasons why the openness of research data may need to be restricted but any restrictions must be justified and justifiable
3	Open access to research data carries a significant cost, which should be respected by all parties
4	The right of the creators of research data to reasonable first use is recognised
5	Use of others' data should always conform to legal, ethical and regulatory frameworks including appropriate acknowledgement
6	Good data management is fundamental to all stages of the research process and should be established at the outset
7	Data curation is vital to make data useful for others and for long-term preservation of data
8	Data supporting publications should be accessible by the publication date and should be in a citeable form
9	Support for the development of appropriate data skills is recognised as a responsibility for all stakeholders
10	Regular reviews of progress towards open research data should be undertaken

Figure 4.2: The 10 Principles of the UK's Concordat on Open Research Data

#### 4.4. UCL ACTIVITY TO DELIVER THE OPEN DATA AGENDA

UCL has a well-established pattern of activity in supporting Open Access to publications. It has established UCL Press as the UK's first fully Open Access University Press.<sup>18</sup> One of its objectives is 'To embed and explore Open Access approaches as the principal means of dissemination for academic work in a digital world.'<sup>19</sup> The challenge for research-intensive universities like UCL is to expand this activity into all relevant fields of Open Science, including Research Data Management. UCL has a Research Data Management policy, which stresses:

'The purpose of this Policy is to provide a framework to define the responsibilities of all UCL members and to guide researchers and students in how to manage the data, enabling research data to be maintained and preserved as a first class research object and made available to the widest possible audience for the highest possible impact.'<sup>20</sup>

The position taken by the UCL policy on Open Data is that research data should be as open as possible, as closed as necessary.

Supported by this policy, UCL is taking practical steps to deliver pan-university RDM systems and services. Top-level activities are illustrated in Figure 4.3 below.


Action	Description
<b>Policy</b>	
1	Established an Open Science Policy Platform, chaired by the Pro-Vice-Provost (UCL Library Services), to oversee the embedding of Open Science approaches into UCL
2	UCL has re-organised its committee structures for technical IT developments to support research – with an emphasis of RDM storage, archiving, publication and discovery systems
3	Pro-Vice-Provost (UCL Library Services) working on Open Science incentives for UCL's review of reward and promotion systems, including research data
4	Pro-Vice-Provost co-chairs UCL's Bibliometrics Working Group, which is looking at new metrics systems for research evaluation
5	Pro-Vice-Provost (UCL Library Services) works with Vice-Provost (Research)'s Office to ensure that Open approaches are represented in all appropriate UCL Committees
<b>Practice</b>	
6	UCL Library Services has appointed 1.5 FTE staff members specifically to work on research data advocacy across the whole of UCL; Subject Liaison Librarians trained in RDM in order to support academic colleagues
7	Training in Open Science, including RDM, now offered to UCL Postgraduate Researchers via the Doctoral School Development Programme
8	Baseline survey undertaken across UCL to identify starting point for advocacy, training and raising awareness about RDM and Open Data
9	UCL investing in development of platforms for storage, archiving and publication of research data
10	UCL Library Services has identified <u>funder requirements</u> for RDM and actively advocates these to researchers across UCL as part of a comprehensive <u>support offering</u> for RDM <sup>21</sup>

Figure 4.3: Outline of current RDM activity to embrace Open Science approaches in UCL

Figure 4.3 outlines ten activities which UCL has prioritised to embed RDM in sound practice for research integrity, leading to Open Science and Open Data, where that is possible. It is important to note that this pan-UCL activity represents a collaborative approach across UCL Divisions. The *LERU Roadmap for Research Data* emphasised in 2013 that work in pursuing RDM institutionally was a collaborative effort. Recommendation 23 captures the spirit of this when it says, 'Involve a broad range of stakeholders in training development and delivery, such as heads of graduate schools with a responsibility for training programmes, the HR department, research librarians, IT directors, accrediting bodies and policy makers'.<sup>22</sup>

#### 4.5. CONCLUSION

Research performing organisations should all have sound research integrity frameworks which support the research-intensive nature of their work. Sound RDM activity is key to this framework as research data becomes increasingly recognised as a component of Open Science. The UK's *Concordat on Open Research Data* is a Best Practice example of what is required in order to move on the agenda for Open Research Data at an institutional level. Figure 4.3 in this Case Study shows how roles and responsibilities for this are allocated to a number of stakeholders and different parts of the university. RDM is a key part of the research agenda in the 21<sup>st</sup> century, and research performing organisations have to be proactive and flexible to embrace the challenges that agenda poses.

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<sup>18</sup> UCL Press: <https://www.ucl.ac.uk/ucl-press>; last accessed 8.1.17.

<sup>19</sup> UCL Press: <https://www.ucl.ac.uk/ucl-press/about>; last accessed 8/1/17.

<sup>20</sup> UCL: <http://www.ucl.ac.uk/library/research-support/research-data/policies>; last accessed 8/1/17.

<sup>21</sup> The UCL RDM website is available as UCL: <http://www.ucl.ac.uk/library/research-support/research-data>; last accessed 8/1/17.

<sup>22</sup> LERU: [http://www.leru.org/files/publications/AP14\\_LERU\\_Roadmap\\_for\\_Research\\_data\\_final.pdf](http://www.leru.org/files/publications/AP14_LERU_Roadmap_for_Research_data_final.pdf), p. 32; last accessed 8/1/17.