TUSLA

An Ghníomhaireacht um Leanaí agus an Teaghlach
Child and Family Agency

Understanding **Open Science**

National Research Office Reference Paper for the Child and Family Agency TUSLA to define and explain what is meant by Open Science and how TUSLA needs to respond.

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Contents

Context for this paper

Open Science is best described as an evolving set of principles which are continually being refined, understood and applied both in the scientific, academic as well as operational environments.

The purpose of this reference paper is to create awareness within Tusla of what Open Science/Open Research principles are, seek co-ordination in the work that is being done by a number of stakeholders via a National Data Oversight Committee and proceed from this reference paper to the creation of a policy document which positions Tusla as an organisation which embraces and promotes research in all its forms as far as possible in accord with the above mentioned principles.

Therefore, this reference paper sets out to achieve three objectives.

First, it aims to introduce and explain the concepts and principles behind Open Science with sufficient detail to grasp the history, current development and emerging issues. A considerable amount of the paper is devoted to explaining the rationale for, development and history of Open Access, since understanding the principles which underlie this are fundamental for progressing to understanding Open Data and the over-arching principles of Open Science

Second, it aims to make clear why it is essential that Tusla work towards a coordinated policy on how it positions itself in response to Open Science developments it is already involved with, how it is likely to be affected by current and future developments and what it needs to do to take advantage of these developments.

Third, it is intended that it can also be used as an awareness raising tool and be the initial step towards an Open Science policy for the entire organisation.

At the outset, it needs to be clear that 'Open' does not necessarily always equate to 'Free' and not everyone, publishers and some scholars, are welcoming of these developments. There will be an opportunity to observe some of the arguments on either side as the paper progresses. Additionally, there is a need to grasp that these concepts are still evolving and changing

Glossary of terms

APC	Author Publication/Processing Charge
Bibliometrics:	Bibliometrics is a statistical analysis of books, articles, or other publications.[1]
Citation Analysis (or Count):	The process whereby the impact or "quality" of an article is assessed by counting the number of times other authors mention it in their work. Citation analysis involves counting the number of times an article is cited by other works to measure the impact of a publication or author. The caveat however, there is no single citation analysis tool that collects all publications and their cited references[2]
Creative Commons Licences	The Creative Commons copyright licenses and tools give everyone from individual creators to large companies and institutions a simple, standardized way to grant copyright permissions to their creative work.[3]
Data	The building blocks for information. These can be described as numbers, symbols, words, images and graphics that have been validated but yet to be organised or analysed.[4]
Data Set	This relates to the group of data elements to which a particular data element belongs. For example, in the case of name, address, dates of birth – each of these data elements are part of a demographic dataset.[5]

[1] OECD Glossary of Statistical Terms. https://stats.oecd.org/glossary/detail.asp?ID=198
[2] https://researchguides.uic.edu/c.php?g=252299&p=1683205
[3] Creative Commons, https://creativecommons.org/licenses/
[4] Health Information and Quality Authority. Guidance on developing Key Performance Indicators and Minimum Data Sets to Monitor Healthcare Quality. Dublin: Health Information and Quality Authority; 2010. Available online from: http://www.hiqa.ie/media/pdfs/HI_KPI_Guidelines.pdf.
[5] https://www.hiqa.ie/sites/default/files/2017-01/Guiding-Principles-Data-Collections.pdf

E- Print:	An e-print is a digital version of a research document that is accessible online, whether from a local institutional, or a central digital repository.
FAIR	Findable, Accessible, Interoperable and Re-Usable
Gold Open Access:	The final author version of research accepted for publication is available on the journal website via a Creative Commons Licence and the possible payment of additional article publication charge.
Green Open Access:	Deposit within an institutional repository of the final author version of research accepted for publication. Access may be subject to an embargo period.
Hybrid Open Access:	Commercial academic publishers who attempt to offer both Green and Gold Open Access options to the final author version of research accepted for publication in one of their published journal titles.
Impact Factor:	The **impact factor** (IF) is a measure of the frequency with which the average article in a journal has been cited in a particular year. It is used to measure the importance or rank of a journal by calculating the times it's articles are cited[6]
Information Governance	The arrangements that are in place to manage information to support national health and social care data collections' immediate and future regulatory, legal, risk, environmental and operational requirements.[7]
NORF	National Open Research Forum

[6] http://researchguides.uic.edu/if/impact

[7] Health Information and Quality Authority. Guiding principles for National Health and Social Care Data collections. Dublin: Health Information and Quality Authority; 2013

Open Access	Open Access is the free, immediate, online availability of research articles coupled with the rights to use these articles fully in the digital environment[8]
Open Data	Open data is research data that is freely available on the internet permitting any user to download, copy, analyse, re-process, pass to software or use for any other purpose without financial, legal or technical barriers other than those inseparable from gaining access to the internet itself[9]
Open Science	Open Science is the practice of science in such a way that others can collaborate and contribute, where research data, lab notes and other research processes are freely available, under terms that enable reuse, redistribution and reproduction of the research and its underlying data and methods[10]
ORCID	ORCID provides a persistent digital identifier that distinguishes you from every other researcher and, through integration in key research workflows such as manuscript and grant submission, supports automated linkages between you and your professional activities ensuring that your work is recognized.
Off-Print	All Oxford Journals authors automatically receive a free link to the full text of their article, which will allow colleagues to view their work without a subscription."[11]
Peer Review	The peer review process is integral to scholarly research. It is a process of subjecting research methods and findings to the scrutiny of others who are experts in the same field. The process is designed to prevent

[8] SPARC. https://sparcopen.org/open-access/
[9] SPARC. https://sparcopen.org/open-data/
[10] https://creativecommons.org/about/program-areas/open-science/
[11] https://academic.oup.com/journals/pages/authors/offprints

	dissemination of irrelevant findings, unwarranted claims, unacceptable interpretations, and personal views. It relies on colleagues that review one another's work and make an informed decision about whether it is legitimate, and adds to the large dialogue or findings in the field.[12]
Pre-Print	A pre-print is any version prior to peer review and publication, usually the version submitted to a journal"[13]
Post-Print	"A post-print is any version approved by peer review. Sometimes it's important to distinguish two kinds of post-print: (a) those that have been both peer reviewed but not copy edited and (b) those that have been both peer reviewed and copy edited."[14]
RDM	Research Data Management
Self-Archiving	**Self-archiving** is the act of (the author's) depositing a free copy of an electronic document online in order to provide open access to it.

[12] http://teachingcommons.cdl.edu/cdip/facultyresearch/Definitionandpurposeofpeerreview.html
[13] Suber, Peter. "Open Access Overview ." *Peter Suber, Open Access Overview (definition, introduction)*. N.p., 21 June 2004
[14] Ibid

1. What is open science and where has it come from?

The answer to the two questions contained in the above heading is equally two fold.

First, Open Science is fundamentally a set of principles which have emerged or evolved in relation initially to the process of scholarly publishing, but increasingly over a number of years have also come to apply to data sharing as well as research and knowledge generation and curation. The origins lie in what is described as 'Open Access' and more recently 'Open Data'— the development of which are explored within this paper, so as to enable a firm understanding of all the interrelated issues and how Open Science has now come to embrace these.

Open Science revolves around the realisation and application of four basic principles which are known by the acronym of **FAIR**[15], namely:

F	**FINDABLE**	To be **Findable** any Data Object should be uniquely and persistently identifiable.
A	**ACCESSIBLE**	Data is **Accessible** in that it can be always obtained by machines and humans
I	**INTEROPERABLE**	Data Objects can be **Interoperable** only if: (Meta) data is machine-actionable (Meta) data formats utilize shared vocabularies and/or ontologies
R	**RE-USABLE**	(Meta) data should be sufficiently well-described and rich that it can be automatically (or with minimal human effort) linked or integrated, like-with-like, with other data sources. Published Data Objects should refer to their sources with rich enough metadata and provenance to enable proper citation.

[15] Wilkinson, Mark D. The FAIR Guiding Principles for scientific data management and stewardship https://www.nature.com/articles/sdata201618

These four principles were initially articulated in an article published by Mark Wilkinson and colleagues in March 2016 (see footnote 15 below) and have come to be accepted by the research and scientific communities as a way of understanding, making sense of and bringing co-ordination to all the material and scholarship which is increasingly described as 'Open'.

Within the article written by Wilkinson and colleagues, he states that:

> *"What constitutes 'good data management' is, however largely undefined, and is generally left as a decision for the data or repository owner"*[16] and *"the article describes four foundational principles…that serve to guide data producers and publishers as they navigate around these obstacles, thereby helping to maximize the added-value gained by contemporary, formal scholarly digital publishing."*[17] *"…it is our intent that the principles apply not only to 'data' in the conventional sense, but also to the algorithms, tools and workflows that lead to that data."*[18]

Finally, *"with this goal in mind, a workshop was held in Leiden, Netherlands, in 2014, named 'Jointly Designing a Data Fairport'*. This workshop brought together a wide group of academic and private stakeholders all of whom had an interest in in overcoming data discovery and re-use obstacles. The meeting concluded with a draft formulation of a set of foundational principles that were subsequently elaborated as (FAIR) for both machines and for people"[19]

Considerable further detail has been attached to each of these principles, but this has not been included within this iteration of the paper for the moment.

These four principles have now been embraced both by the European Commission and the G20. The purpose and intent is that these basic principles should be recognised and applied in a planned way to any research eco-system which is oriented towards being 'Open'. The principles seek to provide specific guidance for the kinds of properties and behaviours which data needs to exhibit to allow them to be discovered and used by both humans and machines. It is essential to understand at the outset that these principles need to be embedded in and be part of the research design process from the beginning, and in order for this to occur, to be embedded within organisational culture and thinking.

[16] Ibid, p.1
[17] Ibid, p.1
[18] Ibid, p.1
[19] Ibid, p.3

Section 12.3 of this paper suggests why this is important for Tusla and places this in the context of both ongoing and current developments within the organisation nationally in respect of Open Science.

To fully appreciate the implications of Open Science it is necessary to trace its evolutionary journey and the underpinning concepts and issues which have emerged. A considerable portion of this paper is given over to discussing Open Access Publishing (or the Open Access movement as it is sometimes referred to) as this is where the emergent concept of Open Science had its beginning and an effective understanding of Open Access (or OA) is the best way to grasp the operative concepts and the environment in which Open Science seeks to thrive — as well as begin to see the implications for our own organisation.

In parallel with Open Access, the concept has also been extended to what is known as 'Open Data' which again will be explored in a later section of the paper. 'Open Data' is an area which has in some ways almost eclipsed Open Access, in that it has been embraced nationally and strategically by the Irish government and others internationally. It is an issue which affects Tusla at a number of levels as we contribute data to the Irish Government Open Data portal[20]. However, the principles which underlie Open Data mostly have their origin within Open Access, so it is to that we now turn.

[20] https://data.gov.ie/

2. The Development of Open Access

2.1 Where did Open Access come from?

An equally important question is why?

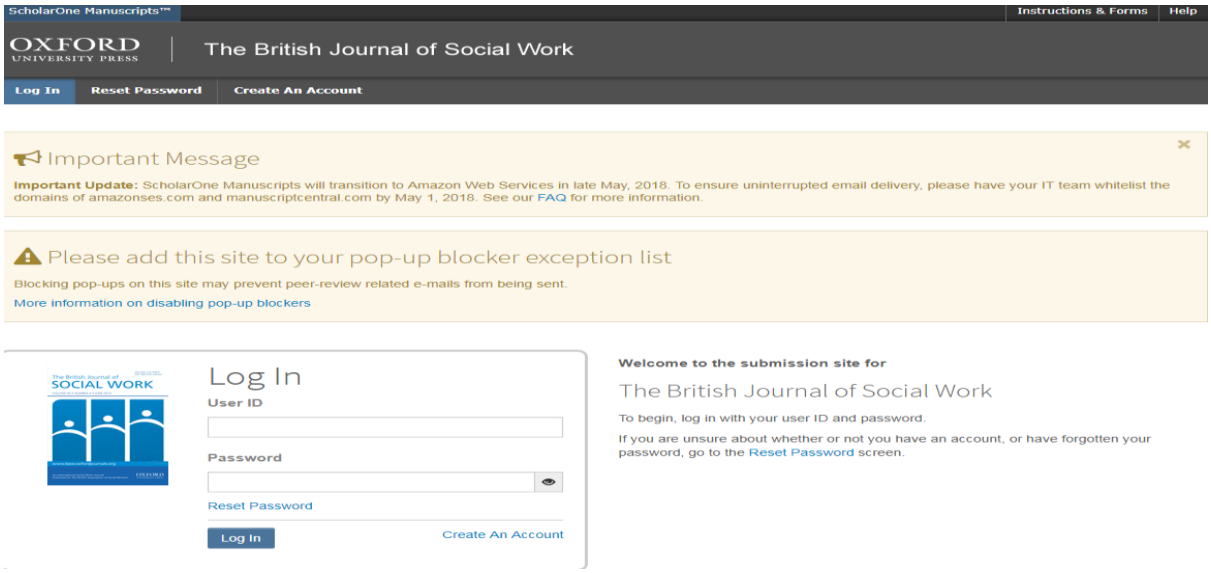
For all those who are engaged in research and practice, access to peer reviewed scholarly literature is a fundamental requirement. For those who are researching, it is essential to consult with what has been researched and written about already. For those who hold tenure in academic institutions, an important part of their role is not just to teach, but to be seen to actively engage in research. An important component of that research role is to publish.

Such publication would in the first instance, and in many cases still does, occur through commercially published peer reviewed academic journals, which until the advent of Open Access took place solely through a number of international publishing houses.

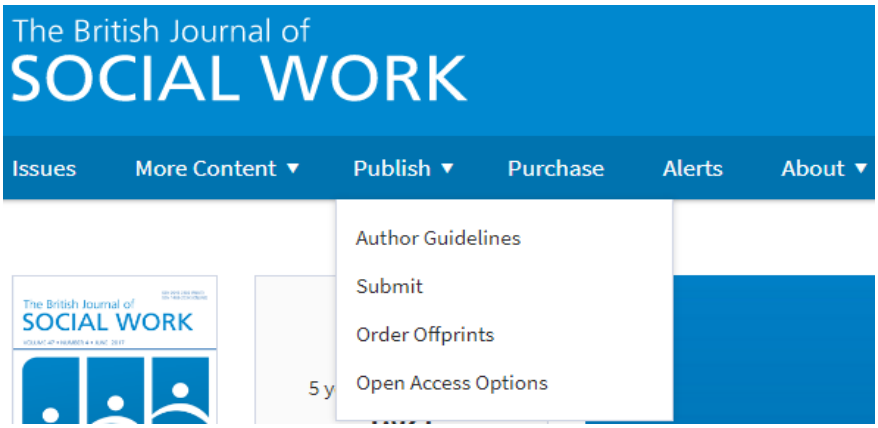
The process of submitting an article for publication is competitive, rigorous and can exist over a timespan of a number of months.

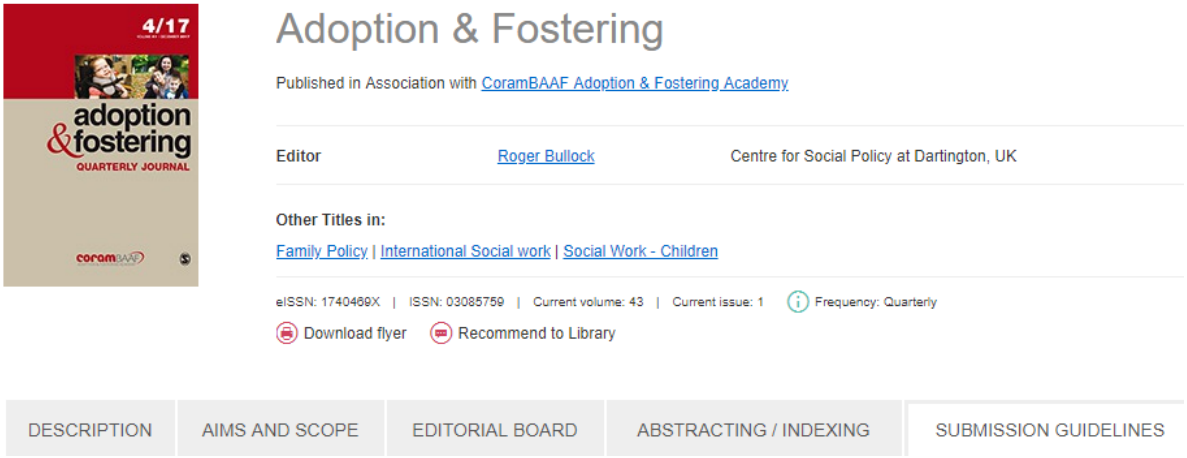
A number of publishers, are now using Electronic Publishing and Review Systems to handle the entire publication process; through from the initial peer review, to the copy editing of the article, both of which can lead to the content of the article being changed before being accepted for publication.

One example of the process is given below from the British Journal of Social Work, published by Oxford Academic.



All publishers make available via their websites author submission guidelines. Examples are given below from the **British Journal of Social Work** and **Adoption and Fostering** (both journals available for access to Tusla staff via Open Athens).





I have not attempted an analysis of the guidelines from all of the publishers we currently subscribe to journals from, as a comparison would be a research paper in its own right. There are variations between publishers and differences in how their systems work, but for each publisher, even if wording or phraseology can be different, there exists a common core of the base requirements needed for submission and eventual publication. A number of these issues are described below. Many of these publishers do or should belong to an organisation known as COPE (Committee on Publication Ethics) https://publicationethics.org/

The table below contains the headings from Author Guidelines web pages to give some insight into the level of complexity or difference that can be contained therein.

Oxford Academic (British Journal of Social Work	Wiley (Child Abuse Review)
• Author's Responsibilities • Multiple Papers from a Single Research Study • Plagiarism • Preparation of Manuscripts • Referencing Formats and Conventions • Third Party Content in Open Access Papers • Language Editing • Electronic Submission of Figures • Copyright & OA Options • Conflict of Interest Policy	• Aims and Scope • Types of Submissions • Initial Manuscript Submission • Manuscript Style • Reporting and Interpretation of Statistical Results • Ethical Guidelines • Authorship Acknowledgments • Reference Style • Illustrations • Copyright • Permissions • Further Information[21]

Further on within this paper (Section 3), a comparison will be made between the workflow and processes associated with some Open Access journals together with some commercially published academic journals. The information which follows is intended to provide basic familiarity with the requirements and/or stipulations of a commercial academic publisher, which:

(a) Gives an introduction to the current process and

(b) Will enable us to make more direct comparisons in later sections.

Some issues worth highlighting at this stage are:

First, within the Instructions and Notes for Authors and other Contributors, for example, from Oxford Academic, included under point 7, reference is made to — Authors are required to ensure the integrity of their manuscripts and, where research is being reported, to demonstrate that this conforms to internationally accepted ethical guidelines and relevant professional ethical guidelines. An ethics statement must be included in the Methods section of the paper confirming that the study has been approved by an institutional review board or

[21] https://onlinelibrary.wiley.com/page/journal/10990852/homepage/forauthors.html

committee and that all participants have provided either verbal or written consent. For further information about the journal's Code of Practice please check here.

What this means is that for an organisation such as Tusla, or an academic institution, the responsibility rests with the author/researcher to demonstrate both that they have complied with the ethical guidelines of their employing organisation, as well as professional body and complete a statement confirming that the research contained within the manuscript has been subject to an ethical review prior to being submitted for publication. Additionally, proof needs to be offered that these conform to relevant internationally accepted ethical guidelines.

Second, there is an emphasis on assuring the quality of papers accepted for publication. Again, for example, in the case of Oxford Academic, the following criteria are listed:

- Does the abstract follow the Journal's guidelines?
- Does the paper offer original and/or novel contributions to the knowledge base in the chosen area of study?
- Is there sufficient coverage and critical evaluation of relevant literature?
- Does the paper contextualise the subject for national and international audiences?
- Is there a consistent clarity of expression in the use of sentence and paragraph structure, grammar and spelling?
- Is there a coherent overall structure?
- Is there clarity of discussion and analysis?
- Is there a conclusion that is consistent with the aims and content of the paper?
- Are relevant anti-oppressive practice issues made explicit (in terms of race, and ethnicity, sexual orientation, disability and health status, religion, age, gender, and class)?
- Do the references follow the Journal's guidelines?

Third, a further issue is that of licensing and it is primarily the implications of this which have given rise to the Open Access movement. To give two examples, from Oxford Academic Publishing and Wiley,

Oxford Academic	Wiley
"It is a condition of publication in the Journal that authors grant an exclusive licence to The British Association of Social Workers. This ensures that requests from third parties to reproduce articles are	To enable the publisher to disseminate the author's work to the fullest extent, the author must sign a **Copyright Transfer Agreement**, transferring copyright in the Paper from the author to the publisher, and

handled efficiently and consistently and will also allow the article to be as widely disseminated as possible. As part of the licence agreement, authors may use their own material in other publications provided that the Journal is acknowledged in writing as the original place of publication and Oxford University Press as the publisher. The licence to publish form will be issued through Manuscript Central on acceptance of the manuscript".[22]	submit the original signed agreement with the Paper presented for publication. A copy of the agreement to be used (which may be photocopied) can be found in the first issue of each volume of *Child Abuse Review*. Copies may also be obtained here - **Copyright Transfer Agreement** [23]

Issues of Copyright are also connected with this discussion and some further explanation is provided in Section 6 of this paper

What this means is that once the licensing agreement has been signed, ownership rights of the article effectively pass from the researcher/author to the publishing house.

Because of the rigorous quality assurance process which many academic journals follow and the reputation that attaches to being published in such a journal, as well as the fact that a publisher bears the cost of the publication process (copy editing, peer review etc.), there may not have always been much consideration of what happened when these exclusive licenses were signed.

The Open Access movement has arisen due to some of the issues which are implicit in the signing of exclusive licenses as well as the gap between submission, publication and cost to access. The three examples below are indicative of this.

(a) If an article from a scholar/researcher/author appeared in a commercially published academic journal, a subscription to that journal title was necessary in order to read it. For example, in the case of the British Journal of Social Work, the National Research Office has purchased a subscription to the journal for all staff nationally, to read not only current content, but additionally, the ability for a substantial number of back issues to be viewed nationally. This is sometimes referred to as the "embargo" period which keeps current content locked behind a paywall, i.e. a paid subscription to the journal, which

[22] https://www.academic.oup.com/bjsw/pages/General_Instructions
[23] https://onlinelibrary.wiley.com/page/journal/10990852/homepage/ForAuthors.html

unlocks access to the current content and immediate back issues. Otherwise, all that is available are basic reference details and a brief abstract.

(b) While respecting the rigour of the publication process, the gap between submission and publication can vary considerably. Consequently, research when published can be out of date. To be fair, many publishers have begun to publish a schedule of dates with each article to give some indication of the turn-around time. For example, the article below is published in the April 2018 edition of the British Journal of Social Work,

> *"The Mental Health and Help-Seeking Behaviour of Children and Young People in Care in Northern Ireland: Making Services Accessible and Engaging. Montserrat Fargas-Malet* and Dominic McSherry"* but was accepted in May 2017.

The Open Access movement has sought and seeks to overcome these restrictions. More positively, it seeks to provide immediate open access to researchers to a wide range of scholarly literature and data.

A number of definitions have evolved to describe what the movement seeks to achieve, and the next section lists the three principal Open Access definitions and quotes from them, so that the essential characteristics and features of Open Access are made clear.

2.2 Open Access Definitions

A number of attempts have been made to define and/or understand what is meant by 'Open Access'.

The first of these attempts was made in 2002 and resulted in the **BUDAPEST OPEN ACCESS INITIATIVE**[24]. The resulting definition intended to embrace scholarly literature, which was described here principally as Journal Literature. What follows below are a number of extracts from the Budapest definition to illustrate the scope of what is meant to be covered —

> *"The public good they make possible is the world-wide electronic distribution of the peer-reviewed journal literature and completely free and unrestricted access to it by all scientists, scholars, teachers, students, and other curious minds. Removing access barriers to this literature will accelerate research, enrich education, share the learning of the rich with the poor and the poor with the rich, make this literature as useful as it*

[24] https://budapestopenaccessinitiative.org/

can be, and lay the foundation for uniting humanity in a common intellectual conversation and quest for knowledge."[25]

"For various reasons, this kind of free and unrestricted online availability, which we will call ***open access****, has so far been limited to small portions of the journal literature."*[26]

"The literature that should be freely accessible online is that which scholars give to the world without expectation of payment."[27]

And the heart of the definition —

By "open access" to this literature, we mean its free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited."[28]

In setting out to achieve this, the statement notes two complementary strategies, namely:

- Self-Archiving
- Open Access Journals

both of which will be explained in greater detail later within Sections 5 and 7 to 11 of this paper.

The second definition, released in June 2003, is known as the **BETHESDA STATEMENT ON OPEN ACCESS PUBLISHING**[29] which following a one-day meeting on April 11th saw the following statement released —

An Open Access Publication is one that meets the following two conditions:

(a) The author(s) and copyright holder(s) grant(s) to all users a free, irrevocable, worldwide, perpetual right of access to, and a license to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any

[25] Budapest Open Access Initiative http://www.budapestopenaccessinitiative.org/read
[26] Ibid
[27] Ibid
[28] Ibid
[29] http://legacy.earlham.edu/~peters/fos/bethesda.htm

responsible purpose, subject to proper attribution of authorship, as well as the right to make small numbers of printed copies for their personal use.

(b) A complete version of the work and all supplemental materials, including a copy of the permission as stated above, in a suitable standard electronic format is deposited immediately upon initial publication in at least one online repository that is supported by an academic institution, scholarly society, government agency, or other well-established organization that seeks to enable open access, unrestricted distribution, interoperability, and long-term archiving (for the biomedical sciences, PubMed Central[30] is such a repository).[31]

The third definition, which occurred a few months later in October 2003, is known as the **BERLIN DECLARATION ON OPEN ACCESS TO KNOWLEDGE IN THE SCIENCES AND HUMANITIES.**[32] Its definition of an Open Access contribution stated that —

Establishing open access as a worthwhile procedure ideally requires the active commitment of each and every individual producer of scientific knowledge and holder of cultural heritage. Open access contributions include original scientific research results, raw data and metadata, source materials, digital representations of pictorial and graphical materials and scholarly multimedia material.

(a) Open access contributions must satisfy two conditions:The author(s) and right holder(s) of such contributions grant(s) to all users a free, irrevocable, worldwide, right of access to, and a license to copy, use, distribute, transmit and display the work publicly and to make and distribute derivative works, in any digital medium for any responsible purpose, subject to proper attribution of authorship (community standards, will continue to provide the mechanism for enforcement of proper attribution and responsible use of the published work, as they do now), as well as the right to make small numbers of printed copies for their personal use.

(b) A complete version of the work and all supplemental materials, including a copy of the permission as stated above, in an appropriate standard electronic format is deposited (and thus published) in at least one online repository using suitable technical standards (such as the Open Archive definitions) that is supported and maintained by an academic institution,

[30] https://www.ncbi.nlm.nih.gov/pmc/
[31] Bethesda Statement on Open Access Publishing http://legacy.earlham.edu/~peters/fos/bethesda.htm#note1
[32] **https://openaccess.mpg.de/Berlin-Declaration**

scholarly society, government agency, or other well-established organisation that seeks to enable open access, unrestricted distribution, interoperability, and long-term archiving.[33]

What is interesting here is that the definition is more expansive and inclusive than the previous two. It is not restrictive just to the scientific community, but also includes the humanities. It speaks of Open Access in terms of knowledge, as well as a procedure, but also goes onto specify that both definition and procedure apply not only to a wide variety of material formats, but also to the research which underlies the 'contribution' as opposed to just the 'publication', i.e. research results, raw data etc.

Collectively, these definitions are known as the BBB definition (as all the cities which played host to the drafting of these definitions began with B).

[33] Berlin Declaration on Open Access to Knowledge in the Sciences and Humanities. https://openaccess.mpg.de/Berlin-Declaration

3. Practising Open Access: Policies and Principles

Both nationally and internationally, countries at a number of levels have been asking how such definitions impact upon themselves and what is needed to put them into practice. As a result, a number of policies and framework documents have been created over the last eleven years. The principal documents are listed with links in Appendix One.

At a national level, many countries, including Ireland, have articulated a set of National Principles,[34] which was made official in October 2012. At country level, many organizations and agencies have sought to take these principles and create open access policies which apply to their own organizations. An example of a draft Tusla Open Access policy is provided in Appendix Two.

This provides a definition of Open Access (in accord with the BBB definition above) together with a set of common and general principles. The first three common principles state that —

(a) The policy confirms the freedom of researchers to publish wherever they feel is the most appropriate.

First, it can be difficult to measure precisely the level of awareness to the fact that a wide variety of Open Access journals exist. The National Research Office has attempted to take some initial steps to improving such awareness through the creation of a number of electronic journal web pages within the Tusla Research Centre, which can be viewed at, http://www.tusla.ie/research/electronic-journals.

A universal Open Access symbol has also been devised and again we have used this within the above web pages, for example,	

Second, a number of different viewpoints can exist (both for and against!) in respect of the value of Open Access publishing. These can include the importance of impact factor and citation count (which are defined/described in the Glossary on pp.5/6). Two examples of such viewpoints and discussions are given immediately below.

(b) A viewpoint which can often be expressed is that Open Access journals and publications lack the rigour and scholarly process which has been attached to the academic publishing process.

[34] National Principles for Open Access Policy Statement
http://arrow.dit.ie/National_Principles_on_Open_Access_Policy_Statement.pdf

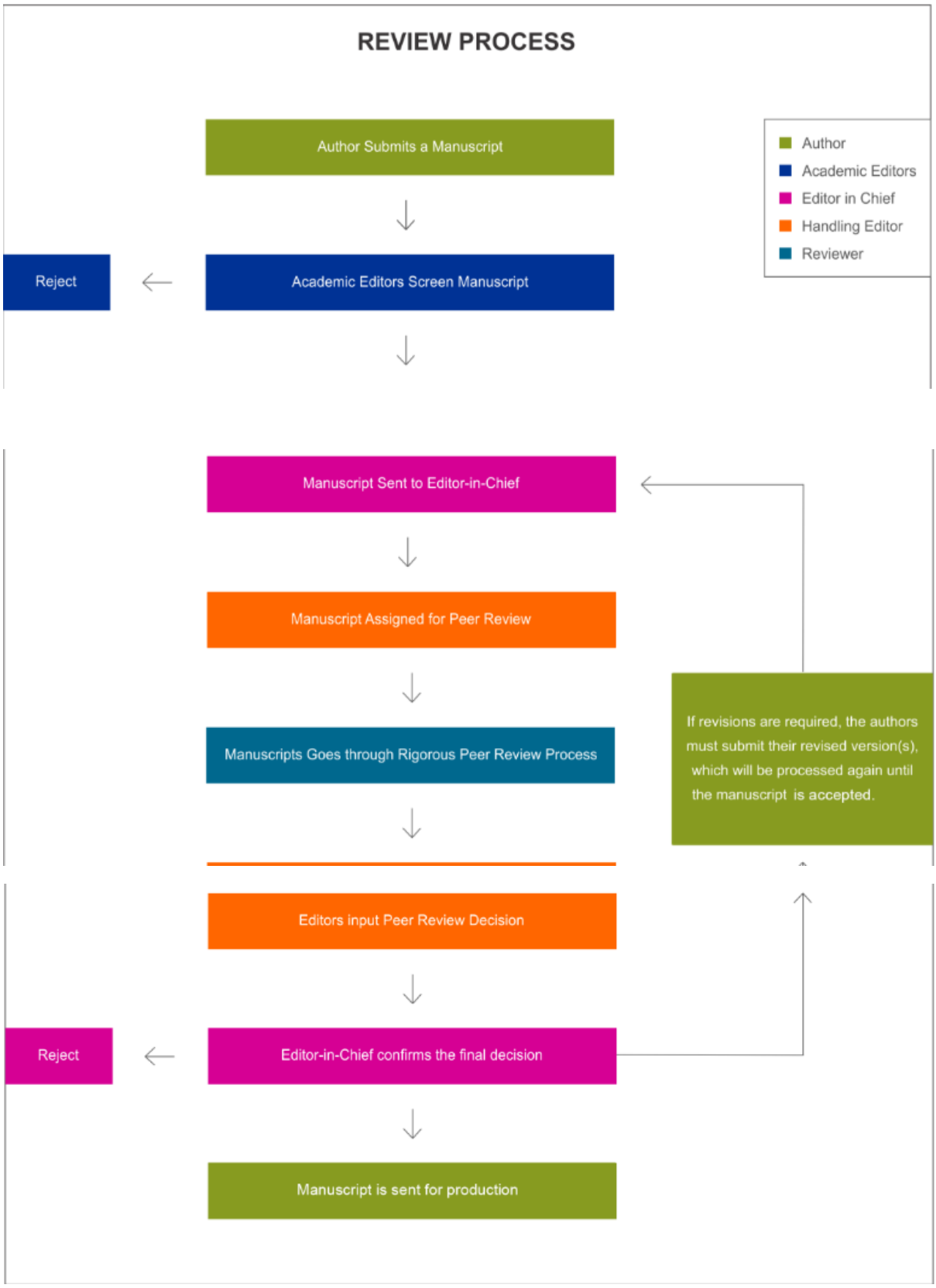
It is essential that if research is published via the Open Access route, the publishing process adheres to at least the same standards as researchers and scholars have become familiar with through the commercial publishing process.

The table below, in the case of two journals, one Open Access and the other Subscription based (currently subscribed to by Tusla) gives an approximate side by side comparison of how the same rigour applies to each. The comparison cannot be taken or applied too far, given that there can be differences in the process that a scholar has to undergo to submit to both (for example, in the case of the subscription journal specialist submission software is used for the peer review). There can also be differences in the way that Open Access is interpreted (which are explained in section 7 of this paper (these differences are highlighted by a *). But these are legal and procedural issues, as opposed to ones that directly impact on quality.

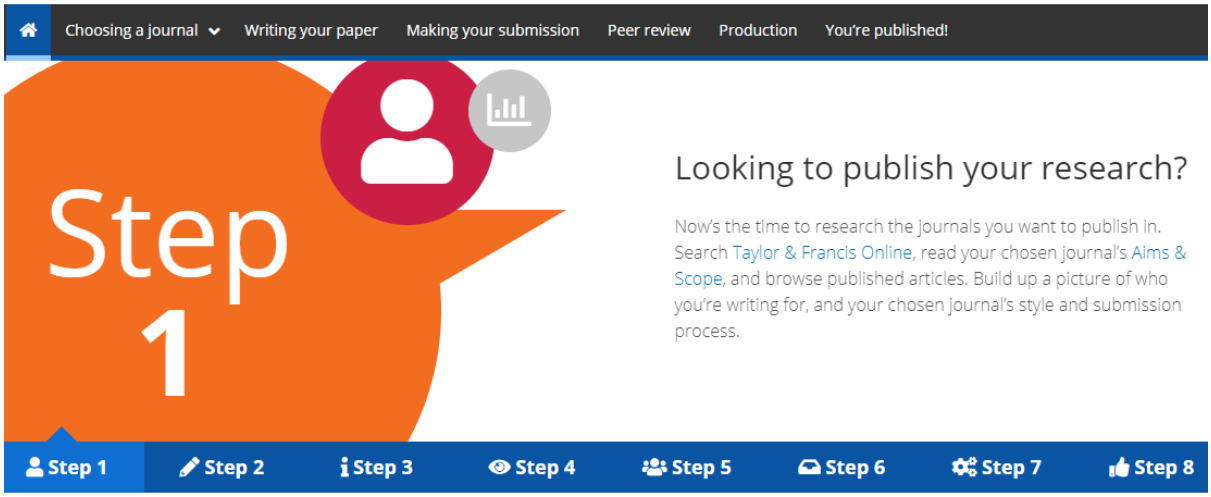
JOURNAL OF SOCIAL SCIENCES (OA)	**JOURNAL OF SOCIAL WORK PRACTICE (Subscription)**
INSTRUCTIONS FOR AUTHORS • Open Access Policy • Publication Ethics (Research Integrity) • Editorial Workflow • Publication Charges * • Abstracting and Indexing	**INSTRUCTIONS FOR AUTHORS** • Open Access Policy * • Publication Ethics (Research Integrity) • Editorial Workflow • Publication Charges * • Abstracting and Indexing

Using the same two journals, one can also examine the process used for the editorial workflow once a journal article has been submitted for publication.

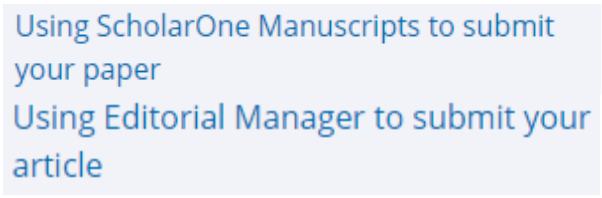
First, in the case of the **OA journal, Journal of Social Sciences**, under instructions for authors – manuscript submission – review process – editorial workflow, the following process is described:

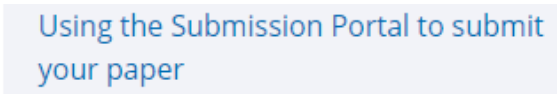

REVIEW PROCESS
Author Submits a Manuscript
Author
Academic Editors
Editor in Chief
Handling Editor
Reviewer
Reject
Academic Editors Screen Manuscript
Manuscript Sent to Editor-in-Chief
Manuscript Assigned for Peer Review
Manuscripts Goes through Rigorous Peer Review Process
If revisions are required, the authors must submit their revised version(s), which will be processed again until the manuscript is accepted.
Editors input Peer Review Decision
Reject
Editor-in-Chief confirms the final decision
Manuscript is sent for production

Second, in the case of **Subscription Based Journal, Journal of Social Work Practice**



The sequencing of some of the steps and the sophistication in terms of technology that commercial publishers can bring to the process (such as the Scholar One software which this commercial publisher uses) but a comparison between OA and Subscription Based will show that the quality assurance process and rigour are fundamentally the same.





(c) A second viewpoint is that the move towards mandatory open access publishing (about which more will be described in Sections 13-14) undermines the intellectual and/or academic freedom of researchers and academics to publish wherever they wish or feel it is most beneficial to do so. A number of arguments and viewpoints have been advanced both for and against the above proposition. I have presented two such arguments below from a blog on maximising the impacts of academic research operated by the London School of Economics and Political Science.

First, four ways in which **OPEN ACCESS ENHANCES ACADEMIC FREEDOM**

1. ***Copyright:*** In open access journals, authors retain copyrights while in the traditional system they must sign over the copyright to the publisher. Professor Stuart Shieber at Harvard elaborates. Traditional publishing infringes academic freedom. Authors assign copyright to publishers as part of the publication process. With this control, publishers can and do limit access to the scholar's writing. Scholars are therefore not free to disseminate their academic work in the broadest way. (See also Sections 2.1 and 6 of this paper)

2. ***Interference*** Open access journals can be cheaper to run, which can increase editorial independence, say Stanford's John Willinsky and his colleagues in Doing Medical Journals Differently: *Open Medicine*, Open Access and Academic Freedom. Open access enables a new journal to become part of the larger academic community immediately, without first having to convince a major corporation or organization to sponsor it or having to assemble sufficient resources to sell initial subscriptions through some combination of advertising and agents. (One estimate sets the price of securing 500 subscribers at roughly US$50,000).

3. ***Citations*** There is a growing literature suggesting that open access articles are read and cited more. This enhances academic freedom by allowing you to better fulfil the responsibilities that go with it — especially the obligation to put your work in front of others. Increased citation also enhances your academic freedom through its quality control function — the use and evaluation of your work by others will give you a sturdier basis for determining what questions to ask next. In short, the connection is tight between visibility, academic freedom and its concomitant duties. (I leave aside here the challenges traditional publishing models are facing as they lose their grip on quality control, cf. why you can't trust research: 3 problems with the quality of science.)

4. ***Archiving*** A bizarre consequences of for-profit digital publishing is that the responsibility for archiving scientific articles has de facto been transferred from libraries to publishers. A library that subscribes to an electronically published traditional journal cannot simply keep an archive of what it subscribes to. The

publisher does that. At least until it decides not to. Or goes out of business. With open access publishing, archiving becomes possible for independent non-profit institutions wanting to take on that responsibility. A natural extension of the notion of academic freedom is the right to have your published work remain available. This is part of the ongoing debate and quality control process that pushes science forward.[35]

Second, a response to this blog post, which lists three key reasons why **OPEN ACCESS WILL DIRECTLY AND INDIRECTLY ERODE ACADEMIC FREEDOM IN THE ARTS, HUMANITIES, AND SOCIAL SCIENCES**.

- ***First***, Senior research managers – who invariably look for quick measures of research quality that do not require reading articles – will use Gold Open Access (see Section 7 below) publications as a proxy for quality. Their assumption will be that gold pieces must have received UK Research Council funding as there are not sufficient funds to pay for gold open access from internal sources. Given that strike rates on awards in the arts, humanities, and social sciences range between 5-20% depending on the scheme, the use of this short-hand does not bode well for most colleagues.

- ***Second***, it is often American-based journals that are considered to be the 'best' in individual fields based on reputation and ranking metrics. As the United States has the largest national research sector in the Anglo-European world, these measures of quality are often reflections of the size of the epistemic communities advocating for the merits of specific outlets and citation patterns within communities that reproduce ranking hierarchies. However, UK research managers have a tendency to go with ranking metrics because these make monitoring 'academic performance' easier for them. The position of a journal in a ranking system–generally the Thomson-Reuters ISI–is said to capture the quality of any individual research article published in the journal itself. Thus, research managers routinely pressurise

[35] Rice, Curt. Four Ways Open Access Enhances Academic Freedom. https://blogs.lse.ac.uk/impactofsocialsciences/2013/04/30/4-ways-open-access-enhances-academic-freedom/

academics to publish in these journals even when their areas of expertise and methodological commitments mean that the chances of acceptance are next to nil on the basis of fit–regardless of the quality of the work itself.

- ***Third***, open access will also lead to a significant impact on the amount of research funding available as the size of grants–particularly smaller grants like ESRC and AHRC doctoral studentships–are adjusted to provide resources for securing gold open access licenses. Given the current allocations of funding and the broader austerity drive, these adjustments will reduce the total number of awards that can be given. They will also narrow the scope of research that is funded away from non-responsive and inquiry-based initiatives towards specific topics and themes that are determined by funders–and influenced by government ideology.[36]

There are different ways of viewing both arguments. Hope over fear is one characterisation. Realism over idealism is another. Others, including Librarians, argue that the "Open Access monograph dash could lead us off a cliff"[37] and "It is not Luddism to be cautious about destroying an academic publishing industry that has served us well"[38]

However, as the National Principles for Open Access, cited above clearly state, "the policy confirms the freedom of researchers to publish wherever they feel is the most appropriate"[39]

(a) This policy is intended to increase the visibility of, and improve access to, the outputs of research funded by the Irish state, where such research is published by the researcher(s) concerned.

One of the outputs of this second principle is the emergence of a large number, both within Ireland, as well as internationally, of research repositories. These will be discussed in greater detail in Section 5 of this paper.

[36] Grayson, Carl. Open Access requirements will erode academic freedom by catalysing intensive forms of institutional managerialism. https://blogs.lse.ac.uk/impactofsocialsciences/2013/05/09/why-uk-open-access-threatens-academic-freedom/
[37] Deegan, Marian. Open Access Monograph Dash could lead us off a cliff. Times Higher Education Supplement, https://www.timeshighereducation.com/opinion/open-access-monograph-dash-could-lead-us-off-a-cliff
[38] Ibid
[39] National Principles for Open Access Policy Statement http://arrow.dit.ie/National_Principles_on_Open_Access_Policy_Statement.pdf

(b) This policy is designed to support the free flow of information across national and international research communities; to support the principle of research-enabled teaching and learning and the generation of Open Educational Resources (OER); to contribute to open innovation through richer and more effective knowledge transfer and diffusion; and to support greater transparency, accountability and public awareness of the results of publicly funded research.

Considerable numbers of Open Educational Resources (or E-Learning) now exist on the public internet in a variety of formats. Some of these are known by a number of acronyms such as MOOC's[40], SPOC's[41] and COOC's[42].

A number of organizations have purchased/developed electronic learning environments, and Tusla currently makes use of its own section of the HSELand e-learning environment, branded iLearn@Tusla.

Additionally, the National Research Office has been working with Workforce Learning and Development national management to develop evaluation criteria for appraising and utilising Open Educational Resources for incorporation into the Tusla Research Centre.

Knowledge transfer and diffusion is recognised as being essential within all organizations, but while both may employ technical means, cultural and information handling capacities also need to be taken into account, and in recognition of this, the National Research Office has begun working with Workforce Learning and Development, to investigate how definitions and standards of Information Literacy[43] can assist in describing and enabling such capacities.

Reference is also made in the above third principle to public awareness of the results of publicly funded research. This, along with the Berlin definition above, paves the way for a discussion on Open Data and principles of Open Science – discussed below.

[40] Massive Online Open Course
[41] Small Private Open or Online Course
[42] Corporate Open Online Course
[43] SCONUL Seven Pillars of Information Literacy
https://www.sconul.ac.uk/sites/default/files/documents/coremodel.pdf

4. Promoting Open Access in Ireland

Many Irish organizations have attempted to own these principles, craft their own definitions of Open Access (in agreement with what has gone before) and take a number of steps towards encouraging open access publication. One such step has been the formation of the National Steering Committee on Open Access in Ireland with a number of objectives.

- The group consists of a number of members, the members of which can be viewed at http://openaccess.thehealthwell.info/members (although when checked on 19/05/2019 the website was no longer available). Currently, there is no evident representation from within Tusla. This group was responsible for the production of The Irish National Principles for Open Access Policy Statement, the objectives of which are:

  1. To inform the research community and the public about open access;

  2. To ensure all researchers in the country are able to make their make their work openly accessible, through at least one open access repository;

  3. To support the evolution of a state-of-the-art and all inclusive national open access infrastructure.

  And which also lists a number of general principles:[44]

- A number of these organizations as stated above have developed their own Open Access Policies and two examples are those developed by the Health Research Board[45]and the Health Service Executive[46].

- Each year, an International Open Access week takes place. This year (2019) it will take place from October 21st to 27th and the website of International Open Access can be viewed at https://sparcopen.org/our-work/open-access-week/

- Our colleagues in the HSE hold an annual Open Access Research Awards event details of which can be seen at https://www.hse.ie/eng/staff/resources/library/open-access/

[44] https://arrow.dit.ie/National_Principles_on_Open_Access_Policy_Statement.pdf
[45] https://hrbopenresearch.org/
[46] http://www.hse.ie/eng/staff/Resources/library/Open_Access/statement.pdf

- The National Open Research Forum (NORF) has recently been formed and the National Research Office, on behalf of TUSLA, has applied to join this. Their website is at http://norf-ireland.net/ (which may become a successor to the National Steering Committee on Open Access in Ireland).

5. Self-Archiving and Open Access Repositories

The Irish National Principles for Open Access Policy Statement, which was referenced above, within its general principles states that

(a) Every publicly funded researcher in Ireland shall have deposit rights in an Open Access repository.

(b) Authors shall deposit post-prints (or the publisher's version if permitted) plus metadata of articles accepted for publication in peer reviewed journals and international conference proceedings.

(c) All peer reviewed journal articles and conference publications should be deposited. Other research outputs including books, book chapters, and reports should be deposited where possible.

(d) Deposit should be made as soon as possible, ideally at the time of acceptance for publication, and no later than the date of formal publication. [47]

However, given the number of repositories, both for institutions, organizations and subjects, a number of factors need to be taken into account.

First, in discussing the role of repositories, whatever their scope, awareness is needed that —

(a) Different repositories serve can serve different purposes. One example of this is obtaining a copy of a research paper, available only from within a commercially published peer reviewed journal and subject to embargo. Repository web sites such as Research Gate and Academia often enable contact to be made with the author and with their permission the obtaining of a 'pre-print'. (definitions of pre-prints, post prints and e-prints are contained within the glossary on pp.5-7)

(b) At the current time, the initiative is very much with the Researcher and Scholar to decide where they want to deposit their completed research. Many academic institutions will insist that the completed research, if undertaken as part of a course of that study, be deposited in their own academic institution – usually, such repositories are managed by the institutions library and information service. After that, the researcher/scholar has the

[47] National Principles for Open Access Policy Statement
http://arrow.dit.ie/National_Principles_on_Open_Access_Policy_Statement.pdf

freedom to deposit for the most part where they wish. Most academic institutions within the country, accredit a number of other repositories (perhaps four or five, based on the quality of research), establish a 'community' within these and urge their researchers/scholars to deposit within these. Researchers/Scholars, are keen to increase their profile and access to their published output, so the solution which academic institutions have devised, is a sensible compromise.

(c) What is or should be the purpose of a Research Repository? Does a repository exist simply to include research that has been completed? How does a repository classify research? The scope of what is included within many repositories can often be very wide. Lenus, for example, the HSE repository run by Dr Steevens Hospital in Dublin, allows self-depositing of a wide range of materials under the heading of research, divided into various collections which it says includes peer reviewed journal articles, grey literature, dissertations, reports and conference presentations, as well as annual reports, strategy papers, policies etc. This is an important question for the National Research Office and for Tusla as a whole, particularly within the context of the planned development of the National Research database. The National Research Office has the mission to co-ordinate all research activity within our organisation. However, research, as a descriptor, is applied even within our own organisation to a wide variety of activities and materials. Would all of these be included within the repository element of a research database or just some?

The great majority of academic institutions within Ireland now have their own repositories. For example, the table below is a sample from both Irish Universities and Institutes of Technology, and completed research undertaken at all these institutions would automatically be inserted into these repositories. Some examples are below:

UCD	Research Repository UCD	http://researchrepository.ucd.ie/
Trinity College	Tara E-Deposit Ireland	http://www.tara.tcd.ie/ http://edepositireland.ie/
UCC	Cork Open Research Archive	https://cora.ucc.ie/
NUIG	Aran	http://library.nuigalway.ie/digitalscholarship/digitalrepositories/

UL	ULIR	https://ulir.ul.ie/
DIT	Arrow	http://arrow.dit.ie/

Others are intended to be national in scope, for example.

The Digital Repository of Ireland, http://www.dri.ie/ describes itself as "a national digital repository for Ireland's humanities, social sciences, and cultural heritage data." Its web pages accessed today (02/08/2017) state that "The Digital Repository of Ireland (DRI) is pleased to announce that it will house a digital archive of The Atlantic Philanthropies' granting activities in Ireland."

Another national repository is RIAN http://rian.ie/. A brief summary of what is on their website states that "The project aim was to harvest to one portal the contents of the Institutional Repositories of the seven university libraries, in order to make Irish research material more freely accessible, and to increase the research profiles of individual researchers and their institutions. As RIAN developed further, other Irish research repositories were added, and more continue to be added, so that RIAN will truly be the portal to Irish research."

The All Ireland Public Health Repository http://repository.thehealthwell.info/ currently contains over 3,000 resources from a wide range of organisations such as IPH, DHSSPS, Department of Health (Ireland), Public Health Agency, Safe Food and Public Health England.

Others are intended to be more subject focussed.

One example of this within Ireland is Lenus, http://www.lenus.ie/hse/ "Ireland's leading source of health-related research and grey literature. Journal articles, dissertations, HSE publications and the collected output of more than 130 health organisations past and present are all freely accessible".

A number of other websites are available for self-archiving and self-deposit which are international in nature. These include websites such as Research Gate[48] and Academia[49].

[48] https://www.researchgate.net/
[49] https://www.academia.edu/

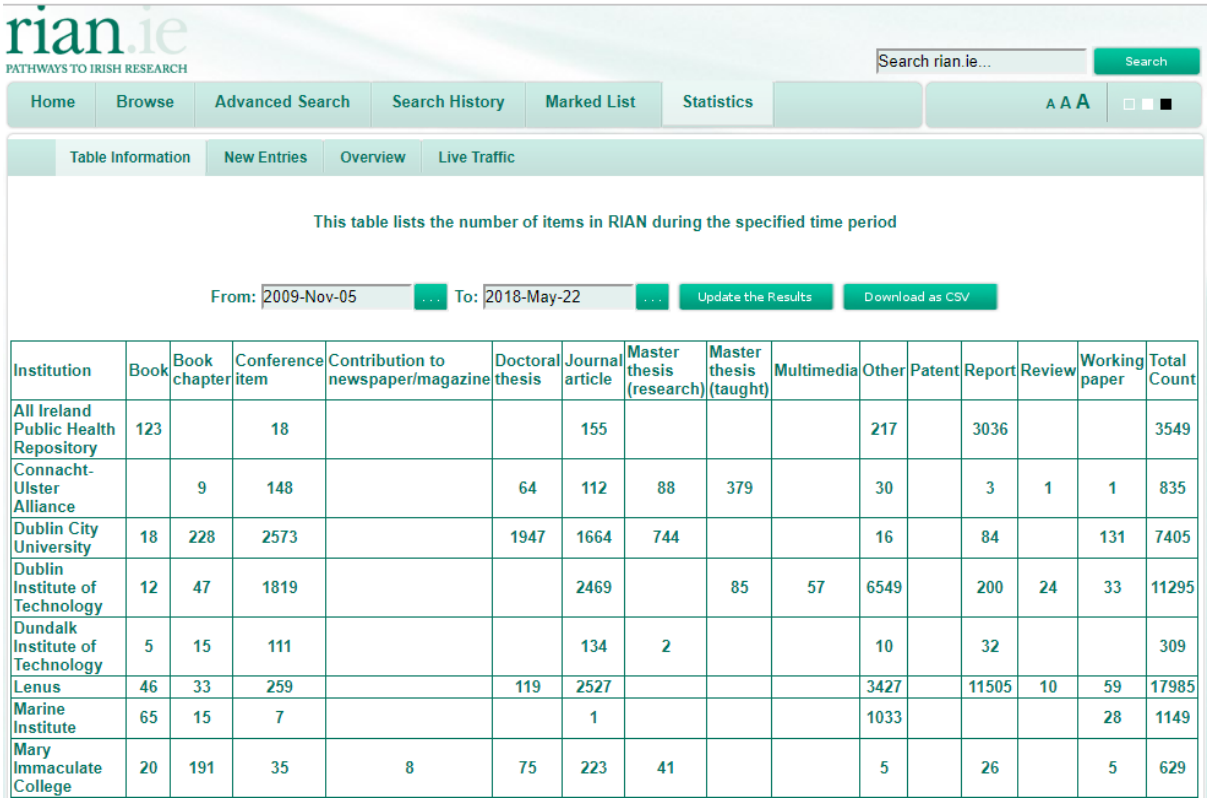
Given the number of repositories that exist, not just for research literature, but increasingly also for research and organizational data, a number of issues arise.

Since a large number exist, there can be a tendency to attempt to organise and make sense of all the various repositories by categorising them in terms of a hierarchy.

For example, as RIAN described its role above, it aimed to *"harvest to one portal the contents of the Institutional Repositories of the seven university libraries, in order to make Irish research material more freely accessible, and to increase the research profiles of individual researchers and their institutions"*, the idea being that you only needed to search one portal – to yield results from a number of different repositories.

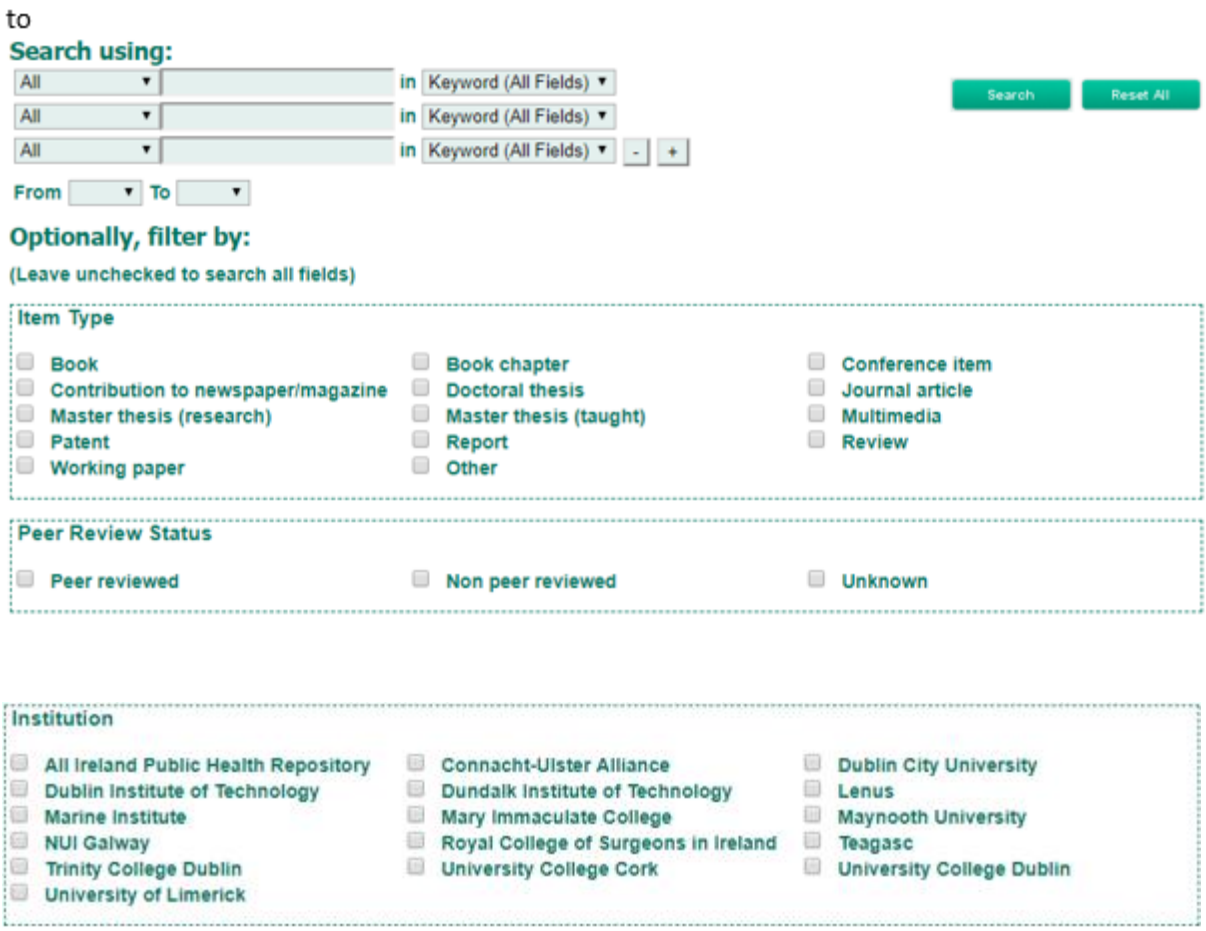
Since the first edition of this paper, the scope of RIAN has now been widened to include *Mary Immaculate College, Limerick, Dublin Institute of Technology, the Health Service Executive, Royal College of Surgeons, Marine Institute and Teagasc.*

Portals such as RIAN are helpful in that in addition to their harvesting capabilities and single access point, they can also provide statistics of use, for example, the screenshot below gives a snapshot of what is available.



Institution	Book	Book chapter	Conference item	Contribution to newspaper/magazine	Doctoral thesis	Journal article	Master thesis (research)	Master thesis (taught)	Multimedia	Other	Patent	Report	Review	Working paper	Total Count
All Ireland Public Health Repository	123		18			155				217		3036			3549
Connacht-Ulster Alliance		9	148		64	112	88	379		30		3	1	1	835
Dublin City University	18	228	2573		1947	1664	744			16		84		131	7405
Dublin Institute of Technology	12	47	1819			2469		85	57	6549		200	24	33	11295
Dundalk Institute of Technology	5	15	111			134	2			10		32			309
Lenus	46	33	259		119	2527				3427		11505	10	59	17985
Marine Institute	65	15	7			1				1033				28	1149
Mary Immaculate College	20	191	35	8	75	223	41			5		26		5	629

Additionally, it also offers a number of advanced search features (see below) when accessing and using material from a repository, there is still a need to become aware of the scope, purpose and quality assurance processes which attach to the individual repositories.



6. Copyright

Copyright is an extremely complex legal issue. It is difficult to try and briefly summarize the issues which now lie behind the concept, but essentially its intent is to protect the rights of authors/researchers from their works being plagiarised as well as the making of copies of their work without reference to them.

As signalled above in 1.1, an author or researcher who submits research for publication to a commercially published journal also needs to possess awareness of how acceptance of their submission by such a publisher can affect their intellectual property rights. One way in which an author can gain such awareness is via the Sherpa/Romeo website/database[50], which allows searches to be made of Publisher copyright policies as well as their policies relating to self-archiving.

Below are two examples of copyright statements from electronic journals we currently subscribe to.

Example 1: The British Journal of Social Work

Permission to reproduce copyright material, for print and online publication in perpetuity, must be cleared and if necessary paid for by the author; this includes applications and payments to DACS[51], ARS[52] and similar licensing agencies where appropriate. Evidence in writing that such permissions have been secured from the rights-holder must be made available to the editors. It is also the author's responsibility to include acknowledgements as stipulated by the particular institutions. Oxford Journals can offer information and documentation to assist authors in securing print and online permissions: please see here . Information on permissions contacts for a number of main galleries and museums can also be provided. Should you require copies of this then please contact the Oxford Journals Rights department. It is a condition of publication in the Journal that authors grant an exclusive licence to Oxford University Press[53]

Example 2: Adoption and Fostering

Before publication, SAGE requires the author as the rights holder to sign a Journal Contributor's Publishing Agreement. SAGE's Journal Contributor's Publishing Agreement is

[50] http://www.sherpa.ac.uk/romeo/index.php
[51] https://www.dacs.org.uk/licensing-works (DACS is a not for profit visual artists rights management organization)
[52] https://www.arsny.com/ (Artists Rights Society (**ARS**) is a copyright, **licensing**, and monitoring organization for visual artists in the United States.)
[53] https://academic.oup.com/bjsw/pages/General_Instructions

an exclusive licence agreement which means that the author retains copyright in the work but grants SAGE the sole and exclusive right and licence to publish for the full legal term of copyright. Exceptions may exist where an assignment of copyright is required or preferred by a proprietor other than SAGE. In this case copyright in the work will be assigned from the author to the society.

The wording may be slightly different in each of the two examples, but they are carefully phrased legal statements which both seek to make clear that when accepted for publication by a publisher, copyright or ownership rights of what emerges from their peer review and publication process, rests with the publisher.

Copyright in most countries is underpinned by legislation and in the case of the Republic of Ireland —the relevant and most recent legislation is the Copyright and Related Rights Act of 2000.[54]

The enactment and compliance with such legislation is the responsibility of a national or institutional licensing administration. In our case, this is the Irish Copyright Licensing Agency.[55]

Some of the immediate implications for Tusla, from the perspective of publishing research results and data in such journals are:

- A need to develop awareness of how Tusla might be affected by the Copyright and Related Rights Act of 2000
- A need to cultivate awareness of commercial academic publisher publishing agreements and the subsequent consequences for ownership rights of what is published within the journal
- A need to contrast such agreements with Open Access publishing agreements, which are described more fully below
- Develop the capacity to review and respond to publisher electronic access licenses, which govern whether or not we can access the electronic content from the publisher website

[54] http://www.irishstatutebook.ie/eli/2000/act/28/enacted/en/html
[55] http://www.icla.ie/

7. Green and Gold Open Access

As is evident from the preceding sections, there can be differences of opinion from a variety of researchers and professionals about the move towards Open Access publishing.

Understandably, many commercial publishers see Open Access publishing as a threat to the viability of what has become their business. While this may not be the only factor, it is largely against this backdrop, that the distinction between **Green** and **Gold** Open Access has emerged in recent years and given rise to two 'routes' through which publication of research can take place.

The flow charts (on the following page) illustrating the Green and Gold routes have been taken from the UCD Library Website[56] and offer a fairly good overview of the options available via each route.

[56] Open Access for Research Impact: Green v. Gold. https://libguides.ucd.ie/openaccess/greengold

Within Green Open Access, the final post-peer reviewed version will not necessarily be the same version in terms of formatting and print style that appears in the published edition of the subscription based journal.

Within Gold Open Access, the published version in the subscription based journal, becomes immediately available to view both within the print version of the journal as well as electronic full text version.

The Journal of Social Sciences cited above in 3a, also describes itself as a Gold Open Access publication, as the:

> Journal of Social Sciences is a gold open access publication which means that all published manuscripts are feely available for unlimited access.

On a light hearted note, Open Access could be said to be taking on all the colours of the rainbow!

In a recently published article with the electronic version of Nature[57], reference is made to ***Bronze*** Open Access, which the article argues supersedes Green and Gold. These are articles which are available on websites hosted by their publisher — either immediately or following an embargo — but are not formally licensed for reuse. To quote from the article:

> *"Without a license, articles are free to read, but can't be redistributed or reused, for example, in presentations or course material, says Heather Piwowar, co-founder of the open science not-for-profit* ***ImpactStory****, who led the analysis. Without explicit permission, they also can't be mined by computer software. As artificial intelligence and machine learning become increasingly important tools, we need our research literature open and available for computational approaches to synthesize it, summarize it, and discover new patterns."*

A further article makes reference to ***Black*** Open Access[58]. Many of these are seen as attempts to disrupt Open Access.

In discussing OA sources, only two sources — Journals and Repositories have been mentioned so far. A leading proponent of OA, Peter Suber, suggests a number of other sources and formats can equally be considered OA. These might include any digital content as well as vehicles such as personal web sites, e-books, discussion forums, e-mail lists, blogs, wikis, RSS feeds etc.

[57] https://www.natureindex.com/news-blog/bronze-open-access-supersedes-green-and-gold
[58] https://www.enago.com/academy/pirate-black-open-access-disrupting-green-gold-open-access/

8. Publisher Embargoes

An issue which coexists with Copyright (at Section 6 above) and applies specifically to the electronic publication of research in commercially published journals is what is referred to as the Publisher Embargo.

Most commercial/academic publishers make the full text of articles published available on their websites. However, the most recent content is only available to those individuals or organizations that subscribe or pay to access that content. So, for example, in the case of the 14 full text journals which the National Research Office has subscribed to and which all Tusla staff nationally can now have access to, we have access to the full text of the most recently published issue of the journal and in most cases issues (or back issues) from a number of previous years – although again, this depends on the individual publisher policy. In the case of one publisher, we only get access to the years we have subscribed for.

Without payment of this subscription, we would find all the most recent content blocked or embargoed, with access only to content from the recent past. The Embargo period varies depending on the publishing house concerned, from a period of six months to 18 months.

With the emergence of Green and Gold Open Access definitions, while the basic distinction above is still essentially true, the way in which the distinction is viewed has become more complex.

To take once more from the Journal of Social Work Practice — the electronic full text version of which Tusla subscribes to:

Title	ISSN (Print)	ISSN (Online)	Open Select (Optional Gold OA Available)	AM embargo for personal website archiving (Green OA)	AM embargo for social scientific network / repository archiving (Green OA)	Gold OA content licence	Gold OA alternative licence	List price lookup for Gold OA APC (discounts may be applicable)
Journal of Social Work Practice	0265-0533	1465-3885	Yes	0 months	12 months	CC BY-NC-ND	CC BY	Find your APC

- The ISSN is the International Standard Serial Number – a unique eight digit number by which this publication is known internationally. Books possess the same by way of ISBN's (International Standard Book Number) – the ISSN for both print and online (electronic) are not the same

- If you or your parent organisation is willing to pay for Gold Open Access, (along the lines of what is described in Section 7 above) the option is available

- For storing/archiving in your own personal website (what is being described here as Green Open Access (and which does NOT fully match the description above in Section 7) you can do so without charge

- For storing in a social scientific network or repository there is an embargo of 12 months, which again is being described here as Green Open Access (which again does NOT fully match the description above in Section 7)

- Gold Open Access content licenses – these will be discussed in the next section

- APC's (Article Publication / Processing Charges) will be discussed in Section 11

As can be seen from the above, Green and Gold Open Access can be open to a number of interpretations.

Some of the implications contained within these preceding Sections 7 and 8 for Tusla, at the current time, would include:

- Creating greater awareness of the potential of e-books, discussion forums, e-mail lists, blogs, wikis, RSS feeds etc., many of which are free to create, and which can be used as part of the movement towards making access to information and knowledge open, shared and transparent. Ownership of many of these is increasingly becoming proprietary. For example, Blogger, the free web based platform, which could be used to create and host blogs, was acquired some years back by Google – and this has been the case with a number of free software services and websites.

- **Green and Gold Open Access** — given some of the preceding discussion, there is a need to develop a clear policy (perhaps modelled on those advocated by Irish academic institutions) on how Tusla intends to understand and position itself with regard to Green and Gold Open Access. This will be essential in terms of current planned European developments (see Sections 14 and 15), our planned national research database and the repository component attached to it, as well as any other repositories we intend to recommend (in order to become aware of their Green and Gold policies). We will also increasingly need to issue guidance to researchers – so it

needs to become an integral part of the way the National Research Office works with staff, both internally and externally.

- Publisher Policies — In the examples given above within Section 7, we have noted briefly some of the differences that can exist between what an academic institution defines as Green and Gold Open Access and what an individual publisher does. This is an area where we and those we work with need to develop much greater awareness. One of the difficulties with this area is that such policies and interpretations can vary between publishers and in many cases even between the different journal titles published by one single publisher.

9. Creative Commons Licences

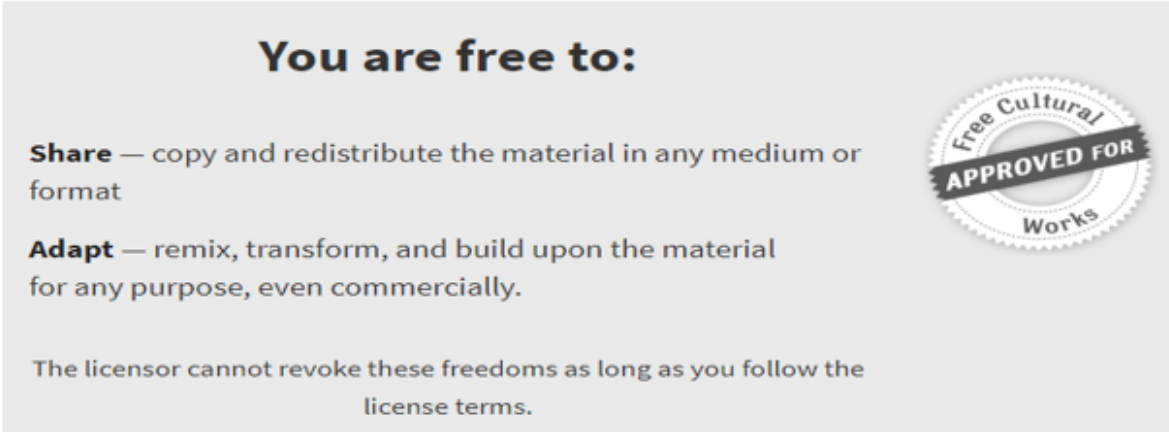
Open Access publications have sought to evolve a different legal framework to overcome some of the barriers to access research which can be presented by Commercial Licensing, Copyright (Section 6) and Publisher Embargoes (Section 8).

Within an Open Access journal and Open Access repository, ownership of the article remains with the author. They make the decision on how to license their material for further use, so that their authorship is clearly acknowledged and prevent plagiarism. The main vehicle/route through which this is accomplished is through the use of what are known as **Creative Commons Licenses**[59].

Quite a wide variety of Creative Commons Licenses exist and the Open Access Journal or Open Access Repository usually selects the one that best suits the aim and scope of either. For example, in the case of Journal of Social Sciences the journal has decided that,

Journal of Social Sciences
Once published, the article will be made free to read and reuse upon publication under a Creative Commons Attribution (CC-BY) licence

Which means in practice:



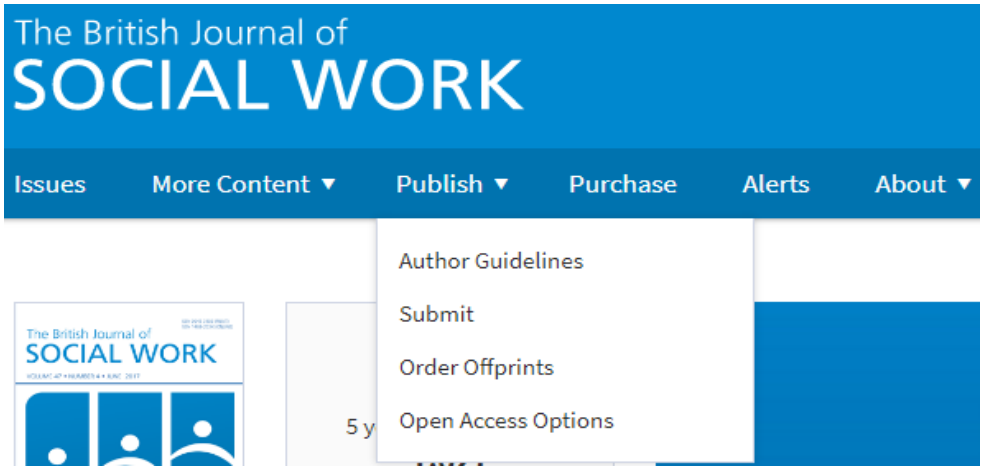
[59] Creative Commons Licenses. https://creativecommons.org/licenses/

There are a wide number of Creative Commons (CC) licenses available and use of some would permit not only publication within an Open Access journal/repository, but additionally for us to make such research accessible via the Tusla Research Centre. For the individual author and organisation, it is a question of selecting the one which best suits the individual requirements of a piece of research.

The licence above is also the one which is being recommended by Coalition S[60] (see 14.1 below) as well as the Irish National Open Research Forum[61] (14.2).

Many commercial publishers, as part of their attempt to reconcile or negate the effect of Open Access publishing, also make use of CC licenses to allow access to content under certain conditions. To give two examples below:

1. In the case of the BRITISH JOURNAL OF SOCIAL WORK it can be seen from the 'Publish' drop down menu, there is an Open Access Option.



[60] https://www.scienceeurope.org/news/coalition-s-releases-revised-implementation-guidance-on-plan-s-following-public-feedback-exercise/
[61] http://norf-ireland.net/

And once Open Access Options is selected, the following Creative Commons Licence Options display:

Creative Commons Attribution licence (CC BY)
Creative Commons Non-Commercial licence (CC BY-NC)
Creative Commons Attribution licence (CC BY)
Creative Commons Non-Commercial licence (CC BY-NC)
Creative Commons non-Commercial No Derivatives licence (CC BY-NC-ND)

2. In the case of the JOURNAL OF SOCIAL WORK PRACTICE under Instructions for Authors:

> *"When you publish Gold Open access with Taylor & Francis we ask you to sign a publishing agreement. This gives us the non-exclusive right to publish the* ***Version of Record*** *of your article. You, the author, retain copyright. The agreement includes the Creative Commons License of your choice. This dictates what others can do with your article once it's published."*

Attribution (CC BY)

Others can distribute, remix, tweak, and build upon your work, even commercially, as long as they credit you for the original creation. We offer this license on our full Open and our hybrid Open Select journals (when publishing on a gold OA basis). All Cogent OA articles are published CC BY and Dove Medical Press offers the CC BY license to authors whose articles are funded by the organizations listed on the Dove website.

Attribution-NonCommercial (CC BY-NC)

Others can remix, tweak, and build upon your work non-commercially. Although their new works must also acknowledge you and be non-commercial, they don't have to license their derivative works on the same terms. We offer this license on our full Open Journals.

Attribution-NonCommercial-NoDerivatives (CC BY-NC-ND)

Others can download your works and share them with others as long as they credit you, but they can't change them in any way or use them commercially. We offer this license on our hybrid Open Select journals (when publishing on a gold OA basis) and on Dove Medical Press journals.

A complete listing/description of the Creative Commons Licenses can be found at https://creativecommons.org/licenses/

In terms of the emerging definitions of Green and Gold Open Access detailed above, Creative Commons Licenses would usually equate to Gold Open Access.

When searching the journal websites of commercial publishers for information on Open Access options, the task is not always an easy one. To be fair, Oxford Academic, the publisher of the British Journal of Social Work, has made the information fairly visible via a drop down menu from the journal home page. Taylor and Francis, the publisher of the Journal of Social Work Practice, have also provided some quite helpful information on their Instructions for Authors page – but you have to scroll right to the bottom to find it and then follow another link to view the information presented above. In the case of another publisher, Springer, who publish Child and Adolescent Social Work (another e-journal which Tusla subscribes to) yes some information is there, but again from the bottom of the screen and further links to explore – so quite a lot of work is involved in seeing what each publisher will allow.

- Within Tusla there is a need to develop much greater awareness of the possibilities and limitations which are available via Creative Commons Licenses

- There is a need to examine what open content these licenses should apply to

- There is also an ongoing need to create awareness within research we commission as well as approve or become involved with, of the applicability of these licenses

- To review the use of these licenses with current Copyright law, both nationally and internationally

- To discuss such options with intending researchers as part of the Research Application and Research Ethics review process

- To examine their applicability in terms of the planned National Research Database

No attempt has been made at this stage to profile or reconcile the openness of such licenses with the implementation of the General Data Protection Regulation Compliance regulations. It is probably the case that most questions or concerns raised as GDPR issues will occur as part of the research approval process, so that by the time publication is contemplated, they will have been addressed. However, this can be further reviewed going forward.

10. Hybrid Open Access Journals

In the results of a study published in 2012, Hybrid Open Access has been described as being

> "*In an attempt to build a gradual transition path between the traditional subscription journal and Open Access, several major publishers have started offering so-called 'hybrid' journals. These are traditional closed access subscription journals, which offer individual authors the possibility to open up their articles for access from day one, against a payment.*"[62]

Essentially, this is a description for the Green and Gold Open Access scenarios described above in Section 7 and associated Creative Commons Licensing options described in the immediately preceding section.

However, when one considers the options and costs, which some publishers levy against such options, it does not always appear designed to encourage the growth in Open Access publishing. For example, as we have seen above, the publisher NOT the author decides which Creative Commons Licenses can be used. Additionally, the publisher (Oxford Academic Publishing in this example) can also impose charges for articles to be made available via Creative Commons Licenses. For example, in this case, the regular fee for each article from the journal (and the fees vary depending on the journal title) is €2,450 plus the following conditions:

- Please note that these charges are in addition to any colour/page charges that may apply.
- Orders from the UK will be subject to the current UK VAT charge. For orders from the rest of the European Union, OUP will assume that the service is provided for business purposes. Please provide a VAT number for yourself or your institution, and ensure that you account for your own local VAT correctly.

The above referenced study goes onto look at the hybrid OA policies of a number of academic/commercial publishers, the costs and the uptake of this option over a number of years, as well as the challenges that this might pose to the publishers in questions. The National Open Research Forum (see Section 14.4 below) states that "The payment of Open Access fees to hybrid journals will not be supported", which is derived from Plan S (see Section 14.2)

[62] Björk, Bo-Christer. "The hybrid model for open access publication of scholarly articles: A failed experiment?" *Journal of the American Society for Information Science and Technology* 63.8 (2012): 1496.

11. Article Publication/Processing Charges (APC's)

The business model which lies behind Open Access publishing is substantially different to that operated by commercial publishing houses.

Initially, Open Access journals tended to use the term "Article Publication Charge." Commercial Publishing Houses have tended to use the term "Article Processing Charge" to reflect the costs they incur in peer review, print production and design and others etc. A stage has now been reached where the two have in some cases become synonymous with each other, as will be seen in one example below.

As we have seen above, when a proposed article/ piece of research is submitted to a targeted journal and its publisher, once accepted for publication, ownership of the intellectual property rights of the published edition of the research, passes to the commercial publisher (see Section 2.1 above). The commercial publisher then bears all the costs of the quality assurance process, such as peer review and eventual formatting for publication.

In the case of Open Access, the author submitting the article bears virtually all of the costs of ensuring the article goes through the publication process as we have described above. These are known as Article Publication Charges. Looking once more at the Journal of Social Sciences, they can include Article *Processing* Charges.

> The processing costs of an article are paid from an author's research budget, or by their supporting institution. These Article Processing Charges replace subscription charges covers the costs of manuscript processing, online availability, hosting and archiving. There are no article submission charges for manuscripts submitted to the journal.

Some OA journals might also decide to charge *Subscription Charges* as well but not in this case. In this specific case, the charges are;

> The processing charges for Journal of Social Sciences are mentioned in the table below.

Manuscript Type	Article Processing Charges
Research Article	$400
Review Article	$400

All prices mentioned above are exclusive of VAT.

Not all OA journals levy Article Publication Charges, such as Advances in Social Work;

In which case, articles can be submitted to the journal for free. There are a number of variations depending on the OA publisher, but the two examples above, make the principle clear.

For many researchers intending to publish the results of their research, there can be reasons for and against, deciding to publish within an Open Access publication. Some of the negative reasons can include

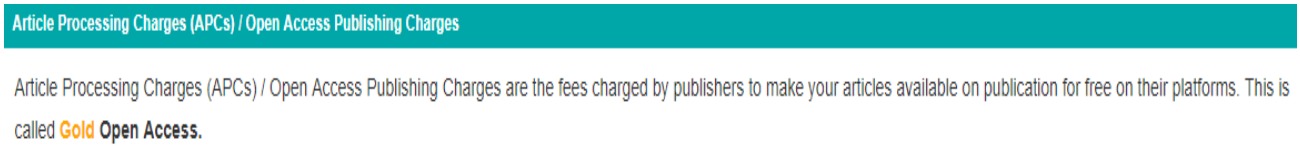
- Lack of general awareness / impact factor of a journal which leads to low visibility for their published research
- The need to pay article publication charges from their research budget
- Concerns about the rigour of the peer review process within an OA publication

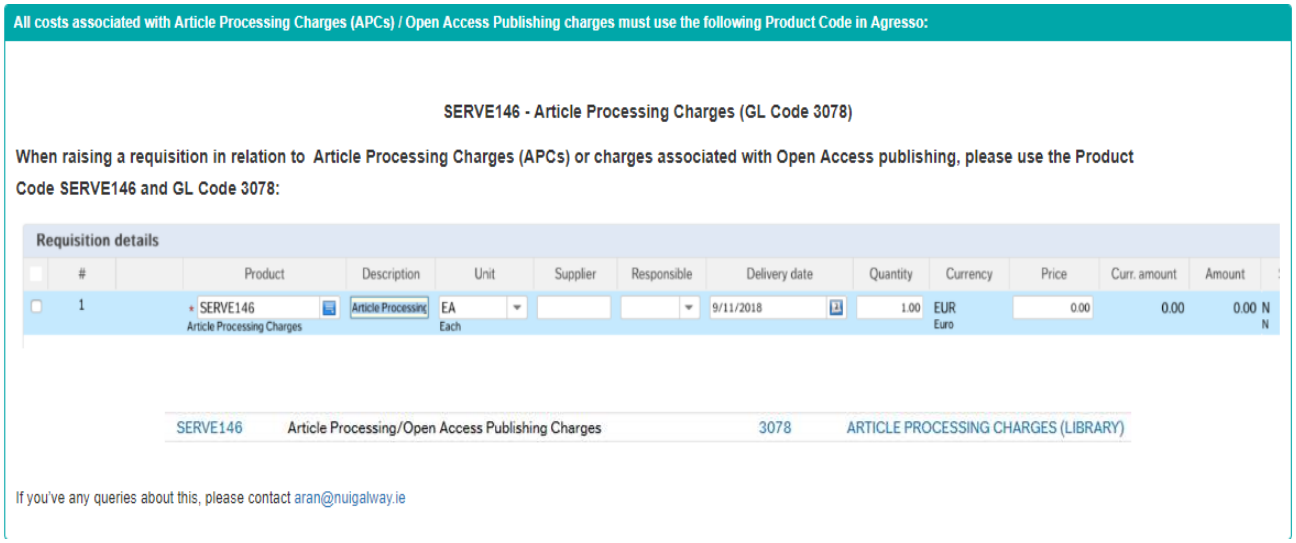
Some of the positive reasons can include:

- The desire to make recent research immediately available to fellow researchers and as wide an audience as possible
- To ensure within the framework of an applicable Creative Commons Licence that research material can be reproduced and used widely
- It enables an author to decide how their research should be made available
- It enables an author to maintain ownership of their work while ensuring it is made available for publication.

The above are a small selection of some of the pros and cons which can be heard against the backdrop of Open Access publishing.

Increasingly, universities are actively encouraging researchers to publish via the Open route. One example, given below, demonstrates how NUI Galway are attempting to ensure that APC's are part of the planning of the research project.





There are a few reasons for the new Product Code:

- By tracking spending on Open Access publishing we aim to prevent double charging of universities by publishers. This happens when authors pay Article Processing Charges (APCs) / Open Access Publishing Charges alongside their libraries' subscriptions to the same journals
- Knowledge of the University's spend on Open Access publishing will help us negotiate better deals for both publishing charges and subscriptions
- The new Product Code will help remove any confusion over how to log these charges in Agresso
- **This is part of an EUA initiative and is being rolled out across all Irish universities**[63]

The picture is a mixed one at the current time, as UCC (University College Cork) states that:

> *"UCC Library doesn't have a fund to support UCC researchers to pay for the article processing charges requested by publishers."*

Research funders often cover these fees through dissemination costs in grants.[64]

So disseminating via Open Access is something that as stated above, has to be built into the design of the project.

[63] NUI Galway Library Guides and Tutorials. Open Access Publishing: Article Processing Charges (APCs) / Open Access Publishing Charges. https://libguides.library.nuigalway.ie/openaccesspublishing/articleprocessingcharges

[64] https://askus.booleweb.ucc.ie/research/faq/176094

Not everyone agrees that Open Access Publishing is a good idea. We saw a number of concerns raised earlier in Section 3(b) listing three key reasons why Open Access will directly and indirectly erode academic freedom in the Arts, Humanities and Social Sciences. While many of these arguments were advanced against the backdrop of academic research, there is a need for us to evaluate the merits and de-merits of both sides of the argument.

12. From Open Access to Open Data

12.1 From Open Access to Open Data

The preceding sections of this paper (2-11) have spent considerable time describing the Open Access movement, its development, scope as well as many of the perceptions and legal issues that attach to it.

The rationale for this is that many of the developments that now exist in respect of Open Data and an emerging set of principles in Open Science, have evolved from the Open Access movement. The most effective way to gain a grasp of the issues which now underpin Open Data and Open Science is therefore to gain them within the context in which they originated.

Additionally, many of the issues which arise from our survey of Open Access are ones which affect those areas of research we are involved in now, as well as those of our academic partners. The following discussion, as above, aims to provide an accessible explanation of Open Data and suggest some questions which will enable Tusla to move forward with the consideration of and implementation of these concepts.

12.2 How can Open Data be understood?

The focus of Open Access was mostly on being able to access freely as well as share completed research in its entirety, mostly in the form of OA Journal Articles which could be published within OA journals and/or self-archived within an OA repository.

However, the scope of the BBB definitions in Sections 2.1 to 2.3 above, particularly the Berlin Declaration, as observed above, makes clear that not only is the focus on the material formats but also, and specifically with respect to the concept of Open Data, the research which underlies the contribution to the literature.

Open Data can be defined in a number of ways. Three definitions which can assist us in grasping the concept are:

1. Open Data is research data that;

- Is freely available on the internet
- Permits any user to download, copy, analyse, re-process, pass to software or use for any other purpose

- Is without financial, legal or technical barriers other than those inseparable from gaining access to the internet itself[65]

2. "Data that can be freely used, re-used and re-distributed by anyone"[66] and "can be accessed on equal terms by the international research community at the lowest possible cost"[67]. Additionally, "the openness of data applies to all components of the research process, not just to research outcomes"[68].

3. More specifically, in respect of public services,

"The concept of Open Data is about making data held by public bodies available and easily accessible online for reuse and redistribution. As public bodies have progressed in areas like eGovernment and data analytics, the potential of data and, in particular, Open Data to help deliver economic, social and democratic benefits has become clearer".[69]

12.3. Why does Open Data matter to Tusla?

Open data already matters to Tusla and arguably possesses a higher profile and level of awareness within the organization, than the Open Access movement where the principles originated from or the Open Science principles, which seek to place what is happening within a broader sense making framework.

For a number of years, Tusla has been actively contributing data into the Irish Open Data portal, the initial responsibility for which lay with the Quality Assurance function within the organization. The responsibility for this has largely passed to Tusla's ICT directorate, who are now actively taking steps towards making our data 'Open' and are taking the lead in the creation of a national Data and Information Hub.

Open data also matters to a number of other stakeholders within Tusla.

Attendance at the first National Commissioning Conference by the NRO's National Research and Information Specialist, Bernard Barrett and Edel Tierney, recently appointed to the role of National Research Officer, also heard throughout the day constant references to the need to not only publish but also access data and the NRO was able to supply definitions in

[65] Scholarly Publishing and Academic Resources Coalition https://sparcopen.org/open-data/
[66] Open Data Handbook, Open Knowledge Foundation. http://opendatahandbook.org/
[67] OECD Principles and Guidelines for Access to Research Data. https://www.oecd.org/sti/sci-tech/38500813.pdf .
[68] Elsevier, and Leiden University. *Open data: the researcher perspective*. N.p.: Leiden U, 2017. Elsevier, Apr. 2017, 12 https://www.elsevier.com/about/open-science/research-data/open-data-report
[69] Irish Open Data Portal. https://data.gov.ie/data

respect of information, data and knowledge to help provide clarity in the meaning attached to these concepts

Open Data also matters to the National Research Office. When research is commissioned with our academic partners and approved through our Research Ethics application process, one of the stated criteria should be whether there is value in the data that emerges as the research is undertaken being made open. In the same way, that a published journal article or thesis is intended to add to the literature on a given subject, so too can data.

However, this is an aspect of Open Data that has been overlooked so far and urgently needs to be seen as part of the wider organisational open data framework.

12.4 Organising and Publishing Open Data

12.4.1 Basic Characteristics of Open Data

(a) **Data needs to be Open by Design**.

When research is undertaken, and data is either a key component, objective and/or intended result of that research, there is a need from the beginning of the project or study, to build in the capacity (in line with some of the format information briefly described below in 12.4.3) to ensure that data can be open, free and re-usable. It is not a capacity which can easily be retrospectively applied to past/previous datasets. As one article states,

> "Open data needs to be embedded in the research process from start to finish"[70]

(b) **Data versus Information**

From a general perspective, a difficulty which can emerge is the way in which so many of the terms we use such as 'Information', Knowledge' and 'Data' are used synonymously. For example, both within the developments outlined immediately above, as well as the attendance at the recent Tusla National Commissioning Conference (also mentioned above in Section 12.3, data was effectively being equated with information.

Data is one form of information which sits alongside many others. It is understandable that staff within a given context find it easy to speak of data as information or even to equate data with statistics or statistical information. Data can also take non-numerical forms. However, one is simply a group or class of the other and when we speak of Open Data there is a need

[70] Elsevier, and Leiden University. *Open data: the researcher perspective*. N.p.: Leiden U, 2017. Elsevier, Apr. 2017, 12

for specificity on exactly what form of data is under discussion and how it is to be made 'open'.

(c) Where is Open Data made available?

A number of decisions can underlie a decision about where Open Data should be made available. Some of the decisions which are important for Tusla at this stage are:

- What co-ordination exists within the organisation in recognising the sources of Open Data as well as capturing information from these sources? Is this data unique to Tusla and not available elsewhere in any other Irish Open Data portal? How do we include data sets from research projects?
- How will all this data be circulated among other Irish as well as EU Open Data portals?
- How do we ensure that there can be linkages if appropriate between the National Research Database, National and International Repositories as well as any other Tusla data sources?
- What standards are used to organise and present this information? (see Section 13.3.2 below and Appendix Three)

12.4.2 Where can Open Data be found?

Considerable attention has been paid internationally and nationally to creating and realising the value of Open Data. Sets of standards as well as national and international data portals and/or repositories have been developed to both encourage as well as underpin the organisation and publishing of Open Data sets.

The Organisation for Economic Co-operation and Development published a set of Principles and Guidelines for Access to Research Data in August 2007.[71]

Within the Republic of Ireland, the Health Information and Quality Authority has produced a number of publications over the last few years in respect of national health and social care data collections, quality improvement tools in respect of these, recommendations for integration and more. These are listed in Appendix One.

An Irish five year Open Data Strategy (2017-2022) also exists,[72] flowing from which an Open Data portal now exists at https://data.gov.ie/data whose stated aim is promoting innovation

[71] http://www.oecd.org/sti/inno/38500813.pdf
[72] https://data.gov.ie/uploads/page_images/2018-03-07-114306.063816Final-Strategy-online-version1.pdf

and transparency through the publication of Irish Public Sector data in open, free and reusable formats. The website states that:

> *"The concept of Open Data is about making data held by public bodies available and easily accessible online for reuse and redistribution. As public bodies have progressed in areas like eGovernment and data analytics, the potential of data and, in particular, Open Data to help deliver economic, social and democratic benefits has become clearer. The data.gov.ie portal brings these datasets together in a single searchable website.*
>
> *Data.gov.ie is intended to provide easy access to datasets that are free to use, reuse, and redistribute. The portal is operated by the Government Reform Unit of the Department of Public Expenditure and Reform."* [73]

The principles outlined above correspond exactly to the basic principles of Open Science described in Section 1 above, namely that data should be **F**indable, **A**ccessible, **I**nteroperable and Re-Usable.

The HSE has also launched its own data portal at E-Health Ireland[74] and an Irish Social Science Data Archive[75] (based in UCD) also exists and describes itself as,

> *"Ireland's leading centre for quantitative data acquisition, preservation, and dissemination. Based at UCD Library, its mission is to ensure wide access to quantitative datasets in the social sciences, and to advance the promotion of international comparative studies of the Irish economy and Irish society."*[76]

Internationally and at EU Level, a European Data portal also exists[77] at https://www.europeandataportal.eu/.

The Department for Public Expenditure and Reform leads policy development and implementation activities under the Open Data initiative across the wider Public Service[78]

Open Data portals are not intended as document storehouses or data warehouses. Rather, they should be seen as living, present focussed and dynamic entities with the potential to be tapped into and used easily as well as added to frequently.

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[73] https://data.gov.ie/pages/aboutdata-gov-ie
[74] https://data.ehealthireland.ie/
[75] http://www.ucd.ie/issda/
[76] www.issda.ie
[77] https://www.europeandataportal.eu/
[78] http://www.per.gov.ie/en/open-data

12.4.3 Open Data Standards and Formats

As stated above in Section 12.4.1, Data needs to be open by design.

Data and datasets can often form a key element of a proposed research study. Therefore, within organisations which make the conscious and deliberate decision to make and design their data open, a consideration going forward for research ethics committees, when assessing and commenting on research proposals, will be the requirement to possess the capacity to do so in accord with a number of accepted Open Data standards and formats, as well as issues affecting consent.

Such standards and plans are evolving all the time. While a Research Ethics Committee may not need to possess detailed knowledge of all the technical specifications of these standards and formats, there is a need be aware of what sets of international standards exist, and to establish channels of advice for their applicability to both research studies and the use and sharing of data more widely within organizations.

A number of international standards underpin the construction not only of the portals and repositories but also attach to the way that each of the individual data elements within an Open Data Portal should be formatted and described, to ensure national and international consistency.

The term 'Metadata' is used to describe such standards. Appendix Three contains an extract from within the Irish Open Data portal which describes how metadata is used.

Additionally, for data to meet the requirements needed to be **FAIR**, data needs to be made available in one or a number of inter-operable formats. A listing of these is provided on https://data.gov.ie/formats together with a rating system. Appendix Four describes some of the formats used.

When one looks within the Irish Open Data portal, a large number of datasets or links to data provided by a number of government departments and organisations already exist. For example, the Department of Children and Youth Affairs, provides access to the dataset for the Indicator set for Better Outcomes Brighter Futures[79] as well as State of the Nation's Children.

The Open Data portal requires login credentials for some functions and is subdivided into a number of sections, i.e. Health. Within this one can also see Creative Commons Licenses (as in Section 6c above) being used. You can also suggest datasets to publish.

[79] https://data.gov.ie/dataset?organization=department-of-children-and-youth-affairs&theme=Society

12.4.4 Planning to Work with Data - Data Management Plans

Research Data Management is consistent with the **FAIR** principles outlined in Section 1 above and focuses on the organisation of data, from its entry to the research cycle through to the dissemination and archiving of valuable results. It is an essential constituent of the research process and causes the researcher to ask questions about how:

(a) You CREATE data and plan for its use

(b) ORGANISE structure and name data

(c) KEEP it, make it secure, provide access, store and back it up

(d) FIND information resources and SHARE with collaborators and more broadly published and get cited.

There are a substantial number of definitions emerging to try and encapsulate what is meant by this growing area. One of the most concise from the UK Economic and Social Data Service is:

> *"A data management plan is an opportunity to consider and describe, when research is being designed and planned, how the research data are going to be managed throughout the research cycle and shared afterwards."*[80]

There is a considerable amount of detail to unpack under each one of the above headings. Many of the activities may well be undertaken by researchers and students already – what the process of Data Management Planning does is provide an evolving framework in which these can be clearly expressed.

One helpful framework which could be utilised was published earlier this year (through Open Access and a Creative Commons distribution licence (CC-BY) which permits unrestricted use, distribution, and reproduction in any medium, provided the original author and source are credited) and is therefore reproduced in Appendix Five, from the original article.

What this and the above framework stress, is that as stated above, Data has to be open by design, and a questioning process is needed to begin moving us in the direction of making data open. Within Appendix Five this process is described as a Rubric.

[80] University of Leicester. Data Management Planning. https://www2.le.ac.uk/services/research-data/old-2019-12-11/create-data/DMPlan

13. Open Science at International, European and Local Levels

Appendix Six evidences the wide range of legislation, policies, guidelines, principles, reports, directives which exist both in the current moment and extending back over a large number of years, which either have bearing on the development of Open Science, or which need to be referenced, for Open Science principles to be able to operate effectively.

The list may not be completely exhaustive, but brings together most relevant documents. This reference paper has not analysed all of these. Relevant items will need to be scrutinised in more detail in respect of the ensuing policy document which flows from this paper.

However, the list demonstrates how seriously within a number of contexts, Open Science is being considered and promoted, and many of the references below, make reference to research as a key component within Open Science.

The list is chronologically arranged list by year.

14. What Happens Next

14.1 Background to Coalition S and Plan S

As stated at the beginning of this paper, Open Science is fundamentally a set of principles which have emerged or evolved in relation initially to the process of scholarly publishing, but increasingly over a number of years have also come to apply to data sharing as well as research and knowledge generation and curation. The origins lie in what is described as 'Open Access' and more recently 'Open Data'. The concept has also within the last decade been extended to include "Open Peer Review"; "Open Scholarship"; "Open Education" and "Open Research" to name a few, with the result that what is referred to as Open Science, is increasingly being referred to as the "Open Agenda"[81].

The above extensions of the concept are all of relevance to the National Research Office and Tusla as a whole, but are not covered within this version of the reference paper.

Essentially, what these principles are about is facilitating both the free flow and access to information and knowledge generated by Research. Considerable blog space as well as journal articles have been given over to discussing the pros and cons of the Open Agenda and a flavour of some of these arguments have been conveyed earlier in this paper.

There can also be debate about the extent to which Open necessarily equates to free. However, the Open Agenda has occurred as a consequence of the ownership of so much information and knowledge being given to international commercial publishing houses, who then charge individuals and organisations substantial sums of money to access that information and impose strict licensing conditions on how that information can be accessed and used.

While it is the case, that these publishing houses have had to meet the challenge presented by the Open Agenda, by way of accepting or introducing models such as Green and Gold Open Access, in practice, little has changed. Some countries have attempted to negotiate with these publishers, such as Norway quite recently,[82]with Elsevier (with whom Tusla has one subscription) but the commentary of one Librarian notes that it excludes Titles like 'The Cell' and 'The Lancet' (a major medical journal) which for example remain behind the paywall, even for these Norwegian researchers.

[81] https://sparcopen.org/what-sparc-does/
[82] https://www.elsevier.com/about/press-releases/corporate/norway-and-elsevier-agree-on-pilot-national-licence-for-research-access-and-publishing

It is therefore in the light of all these factors and the unchallenged position that international commercial publishing houses have enjoyed, that nationally as well as internationally movements are being formed partly to challenge the dominance of these companies, but more broadly to ensure that researchers maintain ownership of their research and can make informed decisions about how the results of their research can be disseminated, shared and made available immediately to fellow researchers and research institutions.

One such international movement, which has existed since September 2018 and is gaining strength internationally, is Coalition S.

14.2 What is Coalition S?

The following has been downloaded and copied from the Science Europe website:

> *"On 4 September 2018, a group of national research funding organisations, with the support of the European Commission and the European Research Council (ERC), announced the launch of coalition S, an initiative to make full and immediate Open Access to research publications a reality. It is built around Plan S, which consists of one target and 10 principles. coalition S currently comprises 13 national research funding organisations and two charitable foundations from 13 countries* ***(within Ireland this includes the Health Research Board, the Irish Research Council and Science Foundation Ireland)*** *who have agreed to implement the 10 principles of Plan S in a coordinated way, together with the European Commission and the ERC."*

14.3 The 10 Principles of Plan S[83]

The key principle is as follows:

> *"Plan S requires that, from 2021, scientific publications that result from research funded by public grants must be published in compliant Open Access journals or platforms.*

In addition:

- Authors retain copyright of their publication with no restrictions. All publications must be published under an open license, preferably the **Creative Commons Attribution**

[83] https://www.scienceeurope.org/coalition-s/

Licence CC BY (see Section 9 above). In all cases, the license applied should fulfil the requirements defined by the Berlin Declaration (see Section 2.2 above)

- The Funders will ensure jointly the establishment of robust criteria and requirements for the services that compliant high quality Open Access journals and Open Access platforms must provide
- In case such high quality Open Access journals or platforms do not yet exist, the Funders will, in a coordinated way, provide incentives to establish and support them when appropriate — support will also be provided for Open Access infrastructures where necessary
- **Where applicable, Open Access publication fees are covered by the Funders or universities, not by individual researchers —** it is acknowledged that all scientists should be able to publish their work Open Access even if their institutions have limited means
- When Open Access publication fees are applied, their funding is standardised and capped (across Europe)
- The Funders will ask universities, research organisations, and libraries to align their policies and strategies, notably to ensure transparency
- The above principles shall apply to all types of scholarly publications, but it is understood that the timeline to achieve Open Access for monographs and books may be longer than 1 January 2020
- **The importance of open archives and repositories for hosting research outputs is acknowledged** because of their long-term archiving function and their potential for editorial innovation
- **The 'hybrid' model of publishing (see Sections 9 and 11 above) is not compliant with the above principles**
- The Funders will monitor compliance and sanction non-compliance

14.4 National Open Research Forum

In response to these developments, within the Republic of Ireland, the National Open Research Forum (NORF) has recently been created. Their website is located at http://norf-ireland.net/. The introductory statement on their website describes its mission as

"The National Open Research Forum (NORF) has been established to deliver an Irish agenda for open research. This Forum is co-chaired by the Higher Education Authority (HEA) and the Health Research Board (HRB) with secretariat from the Department of Business, Enterprise and Innovation (DBEI). It has encompassed and broadened the membership of a previous National Open Access committee combining the expertise of representatives from policy, research funding, research performing, library sector and other key stakeholders in the research system across Ireland. Individual Working groups are addressing key areas of Open Access publications, open research data, infrastructure, and human resources that are needed to deliver for Ireland".[84]

They have launched a public consultation, which is due to close in May 2019, on a draft national statement on transitioning to an Open Research Environment. This has now been made available as a seven page document at http://norf-ireland.net/wp-content/uploads/2019/07/NORF_Framework_10_July_2019-2.pdf and replaces an earlier draft statement made available in November 2018.

The National Research Office intends to make a submission in respect of this statement. Additionally, the National Research Office has made contact with one of the Chairs of the forum (from the Health Research Board) to investigate the possibility of involvement within the forum.

I've copied quite a substantial part of the document below. From a careful read of these, one can observe resonances with some of the arguments that have been made for and against the Open Agenda. Similarly, it is an ambitious agenda and one which challenge many organisations (such as Tusla) in terms of awareness and response. But it is important to have all these out in the open where we will have to make decisions about how we respond and contribute to this national agenda.

Open Access to research publications

1. All Irish scholarly publications resulting from publicly funded research will be openly available by default from 2020 onwards and will be accessible on an ongoing basis. It is

[84] http://norf-ireland.net/

recognised that the timeline to achieve Open Access for publications other than journal articles and conference proceedings, e.g. for monographs and book chapters, may take longer.

2. Where publication is in accordance with these principles, researchers may publish where they feel is most appropriate. Individual researchers, research performing organisations and research funders have a collective duty of care for the research system as a whole (including those who work within it) and for ensuring the widest possible dissemination of research.

3. Every researcher in Ireland shall have the rights and the facility to deposit/publish via a suitable Open Access journal, platform or repository. All researchers should be able to publish their work on Open Access even when their institutions or disciplines have limited means or if they are researchers not in receipt of a research grant (so the question of Article Processing Charges will need to be proactively addressed within a co-ordinated approach).

4. In supporting research excellence across all disciplines, the National Action Plan will consider the variation in publishing practices, e.g. the differential rates of journal-article publishing across disciplines.

5. New and innovative models for Open Access publishing are encouraged, including high quality Open Access publishers who do not charge Open Access publication fees. In the event of publication fees being charged, their funding will be standardised and capped in line with European and/or international agreements, and associated journals should be managed according to ethical and economically inclusive principles. The payment of Open Access fees to hybrid journals will not be supported.

6. The final published version of a publication or the peer-reviewed Author's Accepted Manuscript (AAM) should be made Open Access.

7. Open Access should be immediate upon publication without any embargo period.

8. Open Access publications must be accompanied by an open licence, preferably the Creative Commons Attribution Licence CC BY or, as appropriate, another CC licence such as CC BY-SA or CC0. Licensing terms should not unduly restrict text and data mining, in

accordance with and without prejudice to applicable copyright legislation. The license applied should fulfil the requirements defined by the Berlin Declaration on Open Access.

9. Authors/ institutions are encouraged to retain copyright of their publications.

10. In the interest of public transparency and fair competition and without prejudice to the protection of business information, information will be published, as a standard practice, about agreements between public institutions and publishers, including information on any 'big deal' arrangements, 'off-setting' agreements and processing charge payments.

11. Initiatives will be explored to enhance Open Access research papers with formats, supplementary content and technologies to assist people with disabilities, to support citizen science, public patient involvement, policy making, enterprise use and re-use, and to generally increase the public accessibility and impact of the content. A key to accessibility is the availability of machine readable structured content for all elements of a paper – a prerequisite for assistive technology that empowers people with disabilities to participate in the scientific and research process.

12. Open Access publications should be easily identifiable by appropriate technical means, defined through the National Action Plan. This will include the availability of specific metadata, interoperability standards and persistent identifiers. Such metadata should be available for reuse under a suitable open license. Data on citations (references from one publication to another) should be made available as openly licensed, structured metadata.

13. Through the National Action Plan, robust criteria for compliant Open Access journals, platforms, and repositories will be defined and a list of such journals, platforms and repositories will be published, as will agreed methodologies and processes for ongoing monitoring and reporting on Open Access publications.

14. The importance of open archives and repositories for hosting research outputs is acknowledged due to their sustained role in enabling Open Access over many years, their archiving and long term preservation function and their potential for editorial innovation. In line with the Berlin Declaration on Open Access, and via the National Action Plan, Irish stakeholders will ensure that a complete final version of each publication is made accessible and preserved via an online repository maintained by an academic institution, scholarly

society, government agency, or other well-established organisation that seeks to enable Open Access, unrestricted distribution, interoperability, fault tolerance, immutability and long-term archiving.

Enabling FAIR research data

15. The following research data management principles are confirmed and supported:

- Findable, Accessible, Interoperable, and Reusable (FAIR) data contribute to research integrity and reproducibility
- Those involved in each stage of the research process should have the capacity and skills necessary to enable FAIR data. 9 ibid 10 European Commission (2018) Turning FAIR into Reality: Final Report and Action Plan from the European Commission Expert Group on FAIR Data. Luxembourg: Publications Office of the European Union. https://doi.org/10.2777/1524 5
- Prior planning is essential to ensure research data are managed effectively through all stages of the research cycle, from creation to long-term preservation
- Research data should be interoperable across disciplinary boundaries to enable unrestricted sharing of reusable data between different systems and domains
- A robust citation mechanism for referencing data is necessary for research validation and to make data findable and accessible

16. Data management planning is required as a standard practice from the earliest stage in the research process. Data management plans required as part of that standard practice should address core requirements: data description and collection or re-use of existing data; documentation and data quality; storage and back-up during the research process; legal and ethical requirements; data sharing and long-term preservation; data management responsibilities and resources.

17. Datasets should be made easily identifiable through persistent identifiers, accompanied by standardised metadata, including funder names and grant numbers.

- Where appropriate, datasets should be linked to other datasets and publications through recognised mechanisms
- Additional information should be provided to enable the proper evaluation and re-use of data

- Interoperability standards should be applied to facilitate re-use of data within and across disciplines and support automated processes acting across large, heterogeneous datasets.

18. Research data should be 'as open as possible, as closed as necessary'.

- Research will become and remain findable, accessible, interoperable and re-usable within a secure and trusted environment, through national and international digital infrastructures, including where appropriate, within the European Open Science Cloud (EOSC).
- Research data may be restricted for justifiable reasons, such as commercial exploitation, confidentiality, security, protection of personal data, the achievement of the project's aim, and incompatibility with the further exploitation of the research results or other stated legitimate grounds. Shared metadata are especially important for restricted data and should be made accessible if possible
- Taking into account technological developments (including of dynamic (real-time) data), licensing terms used should not unduly restrict text and data mining of research data resulting from publicly funded research, in accordance with and without prejudice to the applicable copyright legislation
- Any data, know-how and/or information, whatever its form or nature, which is held by private parties in a joint public/private partnership prior to the research action will not be affected by this policy

19. Funders and institutions will include in grant conditions and other support for research, their requirements for data management plans and for data sharing, together with details of their mechanisms for monitoring compliance.

Infrastructures for access to and preservation of research

20. Researchers will need increased access to research resources and services for storing, managing, analysing, sharing, and re-using research information.

21. Synergies will be promoted via a coordinated approach among national infrastructures as well as with global and European initiatives, including the National Open Data Governance Board (ODGB), the European Open Science Cloud (EOSC), relevant European Strategy

Forum on Research Infrastructures (ESFRI) and European Research Infrastructure (ERIC) programmes.

22. The quality and reliability of the infrastructure will be ensured, including through the use of internationally recognised certification mechanisms, specifications and standards and utilising open source systems and software whenever possible.

23. Through the use of additional indicators and metrics, infrastructures will be made fit to collect information that underpins the monitoring and assessment of openness and impact.

Skills and competences

24. Standardised and accredited skills for Open Research will be provided for researchers and required at all career levels, including research students and supervisors. Equality of opportunity and access to skills training will be available for researchers regardless of discipline or institution or funder.

25. Library professionals, data stewards and ICT personnel who provide support, training, advocacy and infrastructural development for Open Research will be included in the national planning and implementation process. Planning for the provision of advanced, specialist professional skills will be considered as part of that process.

Incentives and rewards

26. Information on Open Research and associated skills attainment will be included in research reporting and evaluation at the national level.

27. The academic career system will support and reward researchers who participate in a culture of sharing the results of their research.

28. Funders and institutions will adopt Open Research metrics and 'responsible metrics'12 along with ways of rewarding the full diversity of outputs and of recording the broader social impact of research ('next generation metrics').

14.5 Will it all happen as planned?

At this early stage it is difficult to know what the likely outcome of this plan will be.

For many academics, publishing has become an extremely competitive process, where it is a requirement of academic tenure to publish and be seen to be published and cited at a given frequency. (see definitions for Impact Factor and Citation Analysis in Glossary). However, it is not simply a question of individual article publishing. It is also a question of which articles and papers are accepted for publication within and their corresponding impact and citation measures.

There is a need to investigate the level of awareness of academics, practitioners and Tusla staff about the wide range of Open aAcess publication routes that now exist. Many still view such publications/routes with suspicion, on the basis that the same academic rigour which applies to commercial publishing, does not exist in respect of Open Access (see Section 3 above). Even within Tusla, at a recent presentation (May,2019) which this author gave to some Workforce Learning and Development Training and Development Officers, suspicions were aired about Open Access journals not being as good as commercially published ones.

Some are concerned that Plan S represents an incursion of academic freedom (see Section 3 above). A great deal depends on how one defines freedom, let alone academic freedom, but an article by Marc Couture contained within the following blogspot[85] post, offers a reasonably balanced view of how many would view Plan S at the current time.

A further item containing reservations is contained within a recent news item from the journal "Nature"[86].

What is interesting with both is not that there is outright opposition to the plan – which there is not – but the way in which it is being introduced.

Commercial academic publishers for commercial reasons are unlikely to be sympathetic to the aims of Plan S, since it threatens their existence. The hybrid model of 'Green' and 'Gold' Open access (see Section 11 above) was in substantial measure an intervention from commercial academic publishers to neutralise the effect and advancement of Open Access publishing, so the response from these publishers also needs to be predicted and taken into account.

[85] Couture, Mark. Plan S and researcher's rights: re-framing academic freedom. https://poynder.blogspot.com/2018/11/plan-s-and-researchers-rights-reframing.html
[86] Arguments over European Open Access plan heat up https://www.nature.com/articles/d41586-018-07386-x

Having said all that, Plan S has gained support from many funding organisations. According to the above article, over fifteen research funders have mandated that their research papers are Open Access as soon as they are published. Such organisations include the Wellcome Trust[87], and the Bill and Melinda Gates Foundation, who are part of a consortium of 11 European funding agencies.

As stated above at Section 15.1, Science Europe is the coordinating organisation for national bodies advocating for Plan S and an international listing can be viewed at: https://www.scienceeurope.org/about-us/member-organisations/ .

Obviously, it is difficult to predict the outcome with certainty, but it is likely to be either a gradual transition or a process of seeing how Open Access and Research sits alongside the current commercial publishing system.

14.6 Co-ordination, Integration and Education

Ultimately, in light of all the developments described above, this section of the paper highlights a number of areas which require further discussion to ensure that shared understanding and ownership of Open Science is achieved throughout Tusla.

14.6.1 As described above in Section 12.4.2 and following, considerable attention is being paid to the collection, standardisation of as well as availability of data. Much of the effort in connection with the latter is in connection with the National Data and Information Hub, and more recently with attempts to design reports to capture data within the National Child Care Information System. Two posts have recently been created, within the National ICT directorate to oversee the development of these. However, no attempt has been made to discuss how "open" this data can or should be, to define what is meant by data in the context of each or to acknowledge that other parts of the organisation such as the National Research Office may have data to contribute or which should be linked to. There is a need therefore for much greater consultation and coordination to ensure that not only is all relevant data captured and stakeholders identified, but also to ensure that the management of such processes are seen not only as an ICT responsibility. It is essential that the National Data and Information Oversight Committee (NDIOC) plays a key role both in this co-ordination and subsequent and parallel awareness raising.

[87] https://wellcome.ac.uk/news/wellcome-updating-its-open-access-policy

14.6.2 We need to be clear, that in the light of what is being proposed by the European Union (see Sections 14.2 – 14.4) as well as national responses to these proposals, we need to be aware of how Tusla will be affected by these developments and have some input to the ongoing discussion. One response which we have made is to write to one of the joint chairs of the National Open Research Forum, agreeing to make a submission in respect of the Draft National Statement on the Transition to an Open Research Environment as well as request a meeting to discuss Tusla's possible involvement in same – so coordination and integration both internally and externally.

14.6.3 We also need to consider how we prepare and educate those colleagues across the organization who will be affected by these developments. Some basic steps have been taken in the last two joint meetings which the National Research Office has held with National Workforce Learning and Development colleagues, in considering how information literacy frameworks might be used to enable not only greater understanding of but also the development of information management capacities of staff.

14.6.4 We need to evaluate how Open Research is included in the next Tusla National Research Strategy.

14.7 National Research Office Dissemination Policy

The National Research Office Dissemination policy is currently being drafted. At a future point, the policy will need to embody many of the principles and emerging developments contained within this paper to ensure that Tusla is capable of responding in a planned coordinated way to both current and future national and international developments.

15. Appendices

Appendix One

Principal European and Irish Open Access/Open Science Policies and Frameworks

International

1. European Commission. Open Access Pilot in FP7 (2008)
   http://ec.europa.eu/research/science-society/document_library/pdf_06/open-access-pilot_en.pdf

2. European Commission. Recommendations on access to and preservation of scientific information. (2012)
   https://ec.europa.eu/digital-single-market/en/news/commission-recommendation-access-and-preservation-scientific-information

3. European Commission. Towards better access to scientific information: Boosting the benefits of public investments in research (2012)
   https://ec.europa.eu/research/science-society/document_library/pdf_06/era-communication-towards-better-access-to-scientific-information_en.pdf

4. OECD. OECD Principles and Guidelines for Access to Research Data from Public Funding (2007)
   https://www.oecd.org/sti/sci-tech/38500813.pdf

Irish

1. Self-assessment tool for national health and social care data collections

   https://www.hiqa.ie/reports-and-publications/health-information/self-assessment-tool-national-health-and-social-care

2. Guide to HIQA's review of national data collections

   https://www.hiqa.ie/reports-and-publications/health-information/guide-hiqas-review-national-data-collections

3. Information management standards for national health and social care data collections

   https://www.hiqa.ie/reports-and-publications/health-information/information-management-standards-national-health-and

4. Five quality improvement tools for national data collections

   https://www.hiqa.ie/reports-and-publications/health-information/five-quality-improvement-tools-national-data

5. International review of national health and social care data collections

   https://www.hiqa.ie/reports-and-publications/health-information/international-review-national-health-and-social-care

6. National standard demographic dataset and guidance for use in health and social care settings in Ireland

   https://www.hiqa.ie/reports-and-publications/health-information/national-standard-demographic-dataset-and-guidance-use

7. Recommendations for a more integrated approach to National Health and Social Care Data Collections in Ireland

   https://www.hiqa.ie/reports-and-publications/health-information/recommendations-more-integrated-approach-national

8. Catalogue of National Health and Social Care Data Collections

   https://www.hiqa.ie/reports-and-publications/health-information/catalogue-national-health-and-social-care-data

9. Guiding Principles for National Health and Social Care Data Collections

   https://www.hiqa.ie/reports-and-publications/health-information/guiding-principles-national-health-and-social-care-data

10. What you should know about Data Quality: A guide for health and social care staff

https://www.hiqa.ie/reports-and-publications/health-information/what-you-should-know-about-data-quality-guide-health

11. Guidance on information governance for health and social care services in Ireland

https://www.hiqa.ie/reports-and-publications/health-information/guidance-information-governance-health-and-social-care

12. International Review of Data Quality

https://www.hiqa.ie/reports-and-publications/health-information/international-review-data-quality

Appendix Two

Draft Tusla Policy on Open Access and Unrestricted Access to Published Research

Where a research publication arises in whole or in part from TUSLA funded, sponsored or accredited research the following policy will be adhered to with effect from….

Introduction

The purpose of this document is to outline TUSLA's support for the concept and practice of **Open Access Publication**. Open access publication has been defined separately by three statements known as the "BBB definition" which represents the "Budapest" (Feb 2002), "Bethesda" (June 2003), and "Berlin" (Oct 2003) statements.

TUSLA (The Child and Family Agency) supports and promotes research which supports and promotes the development, welfare and protection of children and the effective functioning of families. One of the main outputs of this research is new ideas and knowledge, which TUSLA expects its researchers, both clinical and non-clinical, to publish in high quality, peer-reviewed journals.

TUSLA has a fundamental interest in ensuring that the availability and accessibility of this output is not adversely affected by the copyright, marketing and distribution strategies used by publishers (whether commercial, not-for-profit or academic).

Free access to publicly funded research is supported by International, European and National organisations. TUSLA makes decisions based on the best available evidence and endeavours to deliver the best possible care within available resources.

Open Access is the free, immediate, online availability of high-quality, peer-reviewed research results with the potential to transform the way we communicate and deliver care and services to children and families.

Definition

TUSLA defines Open Access as:

> *"...free availability on the public internet, permitting any users to read, download, copy, distribute, print, search, or link to the full texts of these articles, crawl them for indexing, pass them as data to software, or use them for any other lawful purpose, without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. The only constraint on reproduction and distribution, and the only role for copyright in this domain, should be to give authors control over the integrity of their work and the right to be properly acknowledged and cited".* [88]

Impact

Harvard University was the first to adopt an Open Access policy in 2008 which has proven successful in having freed readers from excessive publisher pricing and provided authors with greater citation.

This was followed by Stanford University, Massachusetts Institute of Technology Libraries, John Hopkins libraries and in the area of health Johns Hopkins Bloomberg School of Public Health and the National Institutes of Health in the USA.

In the UK, the Department of Health, Medical Research Council, Research Councils UK (RCUK) and Wellcome Trust all have open access policies in place.

In Ireland, the Health Research Board, Science Foundation Ireland, Dublin Institute of Technology (DIT), HSE, Irish Research Council (IRC) and Trinity College Dublin (TCD) have successfully implemented open access policies or mandates.

Key principles

TUSLA's policy is adopted on the following key principles:

1. This publication policy confirms the freedom of researchers to publish first wherever they feel is the most appropriate.

[88] http://budapestopenaccessinitiative.org/boai-10-recommendations

2. The effect of the policy is intended to increase the visibility of, and improve access to, the research funded by the HRB, where such research is intended to be published by the researcher(s) concerned.

3. The policy is designed to support the free flow of information across national and international research communities; to support the principle of research-enabled teaching and learning and the generation of Open Educational Resources (OER); to contribute to Open Innovation through richer and more effective knowledge transfer and diffusion; and to support greater transparency, accountability and public awareness of the results of publicly funded research.

4. The policy is based on recognised best practice[89] [90] [91] [92] and it is aligned with the National Principles for Open Access Policy Statement.[93]

Conditions to which TUSLA funded and approved research and researchers should adhere:

1. All researchers are required to deposit their publications resulting in whole or in part from TUSLA funded and approved research in an open access repository and these publications should be made publicly discoverable, accessible and re-usable as soon as possible.

    • Authors must deposit post-prints (or publisher's version if permitted) plus metadata of articles accepted for publication in peer-reviewed journals and conference proceedings.

    • All peer reviewed journal articles and conference publications must be deposited as soon as possible, ideally at the time of acceptance by the journal/conference and no later than the date of formal publication. Other

[89] http://budapestopenaccessinitiative.org/boai-10-recommendations
[90] European Commission. *'Recommendations on Access to and Preservation of Scientific Information,'* July 2012. http://ec.europa.eu/research/science-society/document_library/pdf_06/recommendation-access-and-preservation-scientific-information_en.pdf
[91] European Commission. *'Towards better access to scientific information: Boosting the benefits of public investments in research'* http://ec.europa.eu/research/science-society/document_library/pdf_06/era-communication-towards-better-access-to-scientific-information_en.pdf
[92] OECD 'Principles and Guidelines on Access to Research Data from Public Funding' http://www.oecd.org/dataoecd/9/61/38500813.pdf
[93] National Principles for Open Access Policy Statement. http://www.oaireland.ie

research outputs such as monographs, books, book chapters, technical reports, research theses, and reports should be deposited where possible.

- Metadata shall comprise the full bibliographic and/or descriptive data and should comply with national and international standards and agreements for harvesting, reporting and interoperability.

2. Repositories should release the metadata immediately upon deposit. Open Access to the full text paper should be made immediately upon deposit or once access restrictions, as required by certain publishers, have expired. Access restrictions should not normally exceed six months after publication for scientific, technical and health science research publications and 12 months for arts, humanities and social sciences research outputs.

3. Researchers should agree terms of deposit with publishers. Clarity should be sought on copyright, licensing and embargo policies and agreed policies with publishers must be respected.

4. The repository should ideally be a local institutional repository that supports interoperability with other repositories and harvesting by national portal/s and international aggregators. Suitable repositories are those that provide free public access to, and make provision for long-term preservation of, published research findings.

5. Research publications deposited in an open access repository must contain a link from the deposited version to the publication site, a URL/ DOI (Document Object Identifier) must be used.

6. Research publications in Open Access Journals must also be deposited in an Open Access repository in the same way as other publications.

7. In accordance with the National Principles on Open Access Policy Statement, where possible, research data supporting the publication should also be made available in an open access repository whenever feasible and linked to associated publication. European and national data protection rules must be taken into account in relation to research data, as well as concerns regarding trade secrets, confidentiality or national security.

8. All research publications, where applicable, must acknowledge TUSLA as the source of research funding, and also include details of the award within the metadata. Researchers will be required to provide acknowledgment of open access publishing as part of the grant evaluation process. Software, together with methods and algorithms, are not directly covered by Open Access repositories. However, in keeping with best practice of scientific reproducibility, key scientific results should be made available openly wherever possible.

How does Open Access work?

Information on Irish institutional repositories, including those within academic institutions and within the health service executive, is available through RIAN, www.rian.ie. TUSLA does not provide additional funds to cover 'gold' Open Access fees.

Appendix Three

Metadata Standards

> *"In order to help realise the benefits of Open Data, public bodies should make their data more searchable and usable. To achieve this, public bodies should provide precise descriptors about their datasets to help in the identification, location and retrieval of online resources by data-users. These descriptors are commonly known as "metadata".*

Metadata is the summary information describing the data, including the availability, nature and constituents of the data. It provides context about the data that helps users understand their meaning, such as:

- What is the dataset called?
- What is the subject matter?
- Where can I locate the dataset?
- When was it produced and last updated?
- From what sources was the information compiled?
- Are there any restrictions on their use?

The Open Data Initiative requires a consistent approach to the publication of Open Data to ensure interoperability between datasets published by public bodies, at both national and international levels.

Accordingly, this Technical Framework recommends the adoption of a standardised Metadata Schema by public bodies, namely the W3C Data Catalog Vocabulary[94], and more specifically, the DCAT Application Profile for European Data Portals[95]. DCAT-AP is being used in a number of European Open Data portals. An extracted Reference Guide to DCAT-AP is available in the table below.[96]

[94] http://www.w3.org/TR/vocab-dcat/
[95] https://joinup.ec.europa.eu/asset/dcat_application_profile/home/
[96] https://data.gov.ie/technical-framework#recommended-metadata-schema-for-open-data

Appendix Four

Inter-Operable Data Formats

While data published in any format can be considered Open Data if associated with an Open Licence, the type of data format used can have significant implications for the usability of the data.

One way to measure the openness of the formats used is through the 5-star deployment scheme for Open Data —the greater the number of stars, the more reusable the data.

Under the Open Data Initiative, public bodies are asked to publish their data in the most open way possible and at a minimum 3 Star such as CSV, JSON or XML. Public bodies are also encouraged to publish datasets in multiple formats, for example, 1 Star (e.g. PDF), 2 Star (e.g. Microsoft Excel) in addition to the required 3 Star (e.g. CSV). 4 Star data means that the data uses Uniform Resource Indicators (URIs) to denote things and 5 Star data means that you link to other people's data. An example of a 4 and 5 Star data format is RDF (i.e. uses the Resource Description Framework. An example of 5 star linked data on the portal can be seen here.

Appendix Five

Table 1. The Support Your Data RDM rubric. The language used throughout the rubric is intended to describe RDM-related activities such as data management planning, organizing data, saving data, preparing data, analyzing data, and sharing data in a researcher-friendly fashion. [97]

• Ad hoc —Refers to circumstances in which practices are neither standardised or documented. Every time a researcher has to manage their data they have to design new practices and procedures from scratch.

• One time —Refers to circumstances in which data management occurs only when it is necessary, such as in direct response to a mandate from a funder or publisher. Practices or procedures implemented at one phase of a project are not designed with later phases in mind.

• Active and informative — Refers to circumstances in which data management is a regular part of the research process. Practices and procedures are standardized, well documented, and well integrated with those implemented at other phases.

• Optimised for re-use — Refers to circumstances in which data management activities are designed to facilitate the re-use of data in the future

	Ad Hoc	One-Time	Active and Informative	Optimized for Re-Use
Planning your project	When it comes to my data, I have a "way of doing things" but no standard or documented plans.	I create some formal plans about how I will manage my data at the start of a project, but I generally don't refer back to them.	I develop detailed plans about how I will manage my data that I actively revisit and revise over the course of a project.	I have created plans for managing my data that are designed to streamline its future use by myself or others.

[97] : Borghi J, Abrams S, Lowenberg D, Simms S, Chodacki J (2018) Support Your Data: A Research Data Management Guide for Researchers. Research Ideas and Outcomes 4: e26439. https://doi.org/10.3897/rio.4.e26439

Organizing your data	I don't follow a consistent approach for keeping my data organized, so it often takes time to find things.	I have an approach for organizing my data, but I only put it into action after my project is complete.	I have an approach for organizing my data that I implement prospectively, but it not necessarily standardised.	I organize my data so that others can navigate, understand, and use it without me being present.
Saving and backing up your data	I decide what data is important while I am working on it and typically save it in a single location	I know what data needs to be saved and I back it up after I'm done working on it to reduce the risk of loss.	I have a system for regularly saving important data while I am working on it. I have multiple backups.	I save my data in a manner and location designed maximise opportunities for re-use by myself and others
Getting your data ready for analysis	I don't have a standardised or well documented process for preparing my data for analysis.	I have thought about how I will need to prepare my data, but I handle each case in a different manner.	My process for preparing data is standardised and well documented.	I prepare my data in such a way as to facilitate use by both myself and others in the future.
Analysing your data and handling the outputs	I often have to redo my analyses or examine their products to determine what procedures or	After I finish my analysis, I document the specific parameters, procedures, and	I regularly document the specifics of both my analysis workflow and decision making process	I have ensured that the specifics of my analysis workflow and decision making process can be

	parameters were applied.	protocols applied	while I am analysing my data.	understood and put into action by others.
Sharing and publishing your data	I share the results of my research, but generally I do not share the underlying data.	I share my data only when I'm required to do so or in response to direct requests from other researchers.	I regularly share the data that underlies my results and conclusions in a form that enables use by others.	Because of my excellent data management practices, I am able to efficiently share my data whenever I need to with whomever I need to.

Appendix Six

Open Science at National and International Level

A Digital Single Market Strategy for Europe

European Commission (May 2015)

An Analysis of Open Data and Open Science Policies in Europe, v2.1

SPARC Europe **(**January 2018)

Building a competitive data knowledge and economy in Europe

European Commission (April 2016)

Council conclusions on the transition towards an Open Science system

Council of the European Union (May 2016)

Data Protection Act 1988

Government of Ireland

Data Protection (Amendment) Act 2003

Government of Ireland

Data Protection Act 2018

Government of Ireland

Data Sharing and Governance Act 2019

Government of Ireland

Directive 2003/98/EC of the European Parliament and of the Council on the Re-Use of Public Sector Information

European Parliament and Council (November 2003)

European statistics Code of Practice

European Statistical System Committee (November 2017)

Evaluation of Research Careers fully acknowledging Open Science Practice Awards, incentives and/or recognition for researchers practicing Open Science

Open Science Policy Platform, Working Group on Rewards and Incentives (July 2017)

Excellence, Talent, Impact; Ireland's strategy for research, development, science and technology

Interdepartmental Committee on Science, Technology and Innovation (Dec 2015). Innovation 2020

H2020 Programme Guidelines to the Rules on Open Access to Scientific Publications and Open Access to Research Data in Horizon2020

European Commission DG Research & Innovation (March 2017)

Health (Provision of Information Act)

Government of Ireland (1997)

Health Identifiers Act

Government of Ireland (2014)

Health Information & Patient Safety Bill

Government of Ireland (2015)

Identifying Transferable Skills and Competences to Enhance Early-Career Researchers Employability and Competitiveness

EuroDoc Doctoral Training Working Group (1st October, 2018)

Impact and the next Framework Programme for Research and Innovation

Laura Keustermans [et al.], LERU (April 2018)

Information Note: towards a Horizon 2020 platform for open access

European Commission (December 2017)

LAB – FAB – APP: Investing in the European future we want Report on maximising the impact of EU Research & Innovation Programmes

Lamy, Pascal & High Level Group, (2016)

National Principles for Open Access Policy Statement

National Steering Committee on Open Access Policy (October 2012)

Open Data Charter

G8 leaders signed the G8 Open Data Charter, which outlined a set of five core open data principles (July 2013)

Open Data Strategy 2017-2022

Department of Public Expenditure and Reform (July 2017)

PASTEUR4OA Case Study, Ireland: The Transition to Open Access
Stuart Dempster Open Knowledge (Dec 2014)

Principles and Guidelines on Access to Research Data from Public Funding
OECD (2007)

Principles for Enhancing the Quality, Access and Impact of Research Infrastructures
Peter van Tienderen & Jouko Väänänen, LERU (November 2017), Four Golden

Proposals for an enabling data environment for health and related research in Ireland
Health Research Board (2016)

Providing Researchers with the Skills and Competencies They Need to Practice Open Science
Open Science Policy Platform, Skills for Open Science Working Group (July 2017)

Recommendation of 25.4.2018 on access to and preservation of scientific information
European Commission **(**April 2018)

Recommendation to the Member States on access to and preservation of scientific information
European Commission (July 2012)

Recommendations for a more integrated approach to National Health and Social Care Data Collections in Ireland
Health Information and Quality Authority (November 2014)

Recommendations on Next Generation Metrics
Open Science Policy Platform, Altmetrics Working Group (October 2017)

Roadmap for Research Data
LERU Research Data Working Group (December 2013)

Roadmap towards Open Access
LERU Open Access Working Group (July 2011)

Staff Working Document Implementation Roadmap for the European Open Science Cloud
European Commission (March 2018)

The FAIR Guiding Principles for scientific data management and stewardship

Wilkinson, M. D. et al. (2016)

Appendix Seven

Letter to Joint Chairperson, National Open Research Forum

You may be aware that Tusla has a National Research Office which now consists of a number of staff, of which I am one.

As part of the work of that office, among other projects, I've been working on the creation of a reference paper for one of our research committees on Open Science, with the aim of raising awareness within the organisation as well as positioning it strategically to work with some of the initiatives, both Irish and European, which will soon impact us all. There are a number of other initiatives occurring such as the creation of a National Data Hub, as well as the creation of a National Research Database, all of which will need to be influenced by the same. The aim at the moment is to use the reference paper as a tool to create awareness within the organisation of what Open Science/Open Research principles are, seek co-ordination in the work that is being done by a number of stakeholders via a National Data Oversight Committee and look to a policy document which positions Tusla as an organisation which embraces and promotes research in all its forms as far as possible in accord with the above mentioned principles.

I've seen the public consultation draft document on the NORF web pages and in consultation with our National Manager for Research, will be happy to make a submission commenting generally on this over the course of the next few weeks before the closing date.

In the light of the work we are doing, we are wondering therefore if it would be helpful for some of us to meet with you and your joint chair to discuss some of the work we are doing and look at how, if useful, we might be involved in the National Open Research Forum. Although office wise I'm based in Nenagh, I'm up in Dublin usually at least once or twice most weeks, so it would not be too difficult to come over to HRB offices. My colleagues are based in the Tusla's Head Office Building near Heuston Station, so easier for them.

As you will know, Tusla is a comparatively young organisation, but a lot has been achieved in quite a short time, both generally and from the point of view of the National Research Office. While we still have quite a lot to do from the perspective of capacity building, we are reaching a stage where we could begin to contribute nationally and would like to foster closer links, both with the HRB generally as well as the work of the National Open Research Forum.

Both myself and Marian Brattman, Interim National Manager for Research, would be very happy to meet both with you and your joint chair if helpful as a first step – so do let me know if you feel such a meeting would be helpful.

We look forward to hearing from you.

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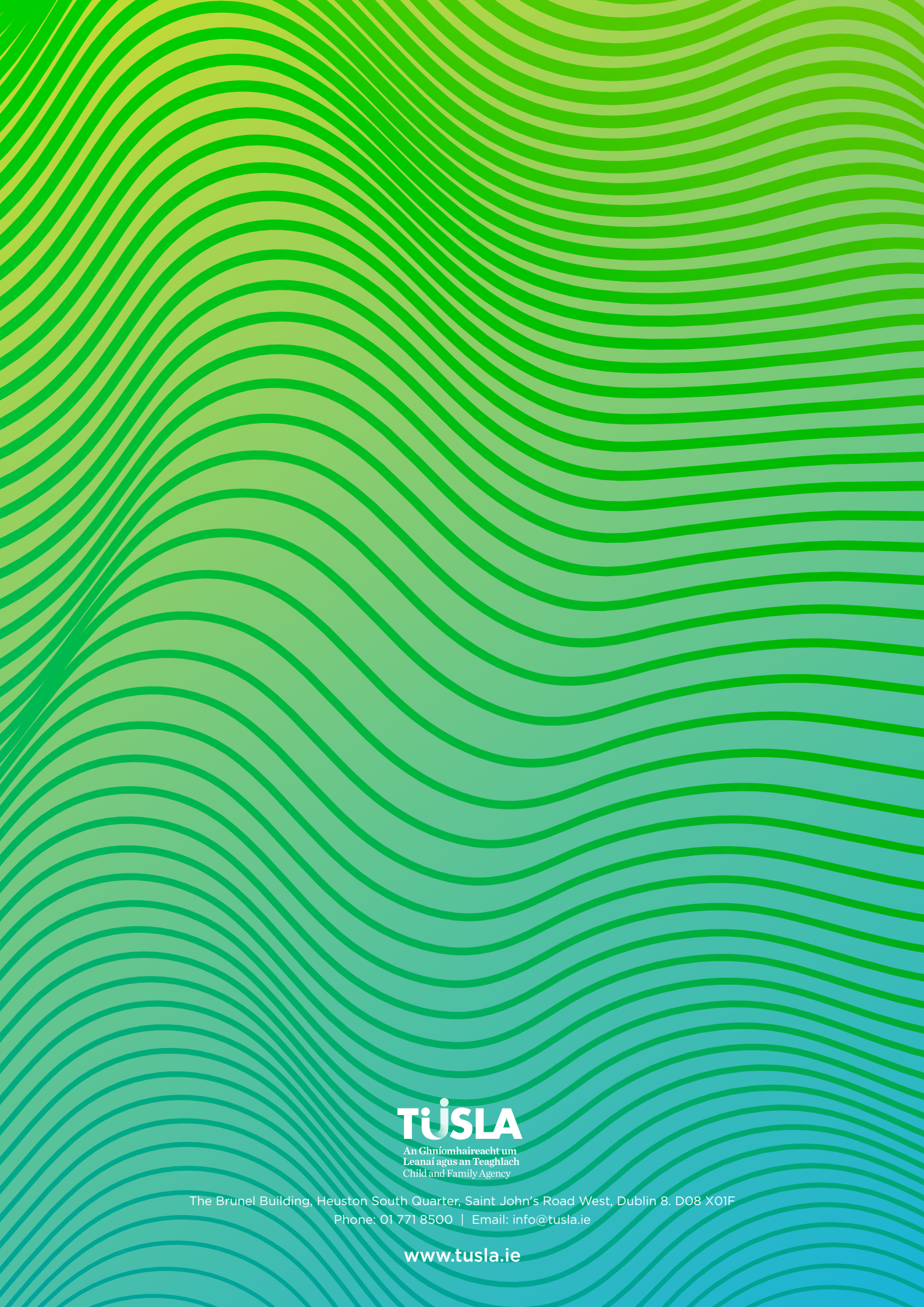

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