science & innovation
Department:
Science and Innovation
REPUBLIC OF SOUTH AFRICA

NATIONAL INTELLECTUAL PROPERTY MANAGEMENT OFFICE
An initiative of the Department of Science and Technology

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NIPMO INTERPRETATION NOTE 14:

CLARIFYING OPEN SCIENCE, OPEN INNOVATION AND OPEN SOURCE…

The National Intellectual Property Management Office (NIPMO) is mandated to promote the objects[1] of the Intellectual Property Rights from Publicly Financed Research and Development Act (IPR Act). One of the functions of NIPMO, according to Section 9(4)(c)(iv)[2], is that NIPMO must provide assistance to institutions with any other matter provided for in the IPR Act.

The Department of Science and Innovation (DSI's) 2019-White Paper on Science, Technology and Innovation (STI) commits the South African government to 'open science' and 'open innovation' as policy approaches. Also, NIPMO has received queries about intellectual property rights (IPRs) when using open source licenses and was requested to provide guidance on how to deal with these licenses in terms of the IPR Act.

This NIPMO Interpretation Note (NIN14) provides clarity on how NIPMO interprets open science, open innovation and open source and provides guidance on how these terms relate to the IPR Act.

Should you have any enquiries regarding any matter relating to this NIN, please do not hesitate to contact the NIPMO Regulatory and Compliance Unit:

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Warm regards

Charsley

Ms Jetane Charsley
Head: NIPMO
Date: 18 July 2022
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[1] Section 2(1) of the IPR Act: The object of this Act is to make provisions that intellectual property emanating from publicly financed research and development is identified, protected, utilised and commercialised for the benefit of the people of the Republic, whether it be for social, economic, military or any other benefit.
[2] Section 9(4)(c)(iv) of the IPR Act: NIPMO must, furthermore provide assistance to institutions with any other matter provided for in this Act.

1. BACKGROUND

"*The recent response of the scientific community to the COVID-19 pandemic has demonstrated very well, how open science can accelerate the achievement of scientific solutions for a global challenge*" - UNESCO [3].

This is an important statement by the United Nations Educational, Scientific and Cultural Organization (UNESCO) about how "open science" facilitated the world's response to a global crisis (the speed at which vaccines were developed). Furthermore, the 2019 White Paper on Science, Technology and Innovation (STI)[4] commits the South African government to "open science" and "open innovation" as policy approaches.

In light of the above, it is important to take a closer look at what exactly "open" means, particularly in the context of intellectual property rights and the Intellectual Property Rights from Publicly Financed Research and Development Act (IPR Act).

2. CLARIFYING TERMS

Before we delve into the details, it is important to note that "open" relates to the **accessibility** or **sharing** of data or knowledge (intellectual property (IP)), not to IP being unprotected, or free of costs or obligations.

The White Paper on STI offers helpful definitions for open science and open innovation.

Open science is "*an approach to research based on **greater access to public research data** enabled by information and communications technology (ICT) tools and platforms, broader collaboration in science – including the participation of non-scientists – and the use of alternative copyright tools for diffusing research results*" [emphasis added]. Open science therefore aims for research results, where appropriate, to be accessible for use by a wider range of users (including non-scientists).

Open innovation aims to "***introduce more actors** into the innovation process so that **knowledge** can circulate more freely and be **transformed into products and services** that create new markets, fostering a stronger culture of entrepreneurship …*" [emphasis added]. The purpose of open innovation is therefore to expand access to knowledge to include more role players in the innovation value chain, so that marketable products and services are developed and find application in society.

Open source or open source software can be defined as *"software with source code that anyone can inspect, modify, and enhance"*[5], meaning that open source software allows the software **source code** (i.e. IP) to be used, analysed and/or modified subject to risks and certain conditions stated in the specific open source license agreements.

[3] Open Science: Intergovernmental special committee meeting related to the draft UNESCO Recommendation on Open Science. https://en.unesco.org/science-sustainable-future/open-science
[4] https://www.gov.za/documents/white-paper-science-technology-and-innovation-1-mar-2019-0000
[5] https://opensource.com/resources/what-open-source

3. OPEN SCIENCE AND INNOVATION AND IP

Open science and innovation concerns collaboration and partnerships with co-creators, where multiple (and often inter-disciplinary) groups could work with the same data but bring different perspectives to finding solution(s) for the same, or even different, problems. Substantially more value can be derived where data sets are used to solve problems other than for what the data sets were intended. For example, utilising astronomy datasets to study atmospheric behaviour to understand aspects of global climate change. Open science aims for increased accessibility and wider participation. For research institutions such as higher education institutions and science councils, open science may present some challenges, but also significant opportunities. It is important that these institutions carefully set out the goals they wish to achieve and put in place the policies necessary to enable success.

The results of South African publicly funded research and development are not necessarily open and accessible to all as various IPRs still need to be protected, and legal/contractual obligations still apply. It should be kept in mind that open science and IPRs are not incompatible or mutually exclusive. Although there is a push to make scientific knowledge more accessible to all (where appropriate), it is generally accepted that open science is premised on the principle of '**as open as possible, as closed as necessary**'. This principle is often expressed in different ways, or expanded upon, in various documents. Internationally there is broad agreement that access to scientific knowledge should only be restricted for the protection of human rights, confidentiality, the right to privacy and respect for human subjects of study, legal process and public order, national security, the protection of intellectual property rights, personal information, sacred and secret indigenous knowledge, and rare, threatened or endangered species[6].

There are advantages[7] and disadvantages to the open science and open innovation approaches. It could be argued that open access, and the use of data unrestricted of guidance, extends the scope of application of data, promotes cooperation and increases the benefits for the general public. On the other hand, it should be kept in mind that "*creations of the mind*" (or IP) and its associated rights should be respected and that authors/researchers have a right to protect their IP against use (and misuse).

In light of the benefits associated with open science, and the need to respect IP and IPRs at the same time, numerous institutions and funding entities subscribe to, and support, the principle of **FAIR** data, which refers to the **F**indability, **A**ccessibility, **I**nteroperability, and **R**eusability of data. Other guiding principles closely associated with open science are **CARE** (**C**ollective Benefit, **A**uthority to Control, **R**esponsibility, and **E**thics) to promote ethical and non-exploitative use of data, and **TRUST** (**T**ransparency, **R**esponsibility, **U**ser Community, and **S**ustainability, and **T**echnology) to ensure the trustworthiness of data repositories.

Supporting FAIR, CARE and TRUST data principles allows for IP to be appropriately protected and ethically managed before it is made publicly available/licensable through trusted repositories. Institutions' policies and strategies need to balance open science and IPRs, and take into

[6] UNESCO Recommendation on Open Science, adopted by Member States in November 2021. https://en.unesco.org/science-sustainable-future/open-science/recommendation
[7] http://www.researchsupport.uct.ac.za/why-open-science

consideration that different types of research outputs and IPRs will require different levels of openness and regulatory exclusiveness to protect against the use/misuse of data and information/knowledge.

4. OPEN SOURCE AND IP

"Proprietary", or "closed source" software, is software where only the original authors of software can legally copy, inspect, and/or alter that software. Should you want to use this closed source software, the users will agree (upfront) that they won't alter the software unless expressly permitted to. Microsoft Office and Adobe Photoshop are examples of closed source software.

In contrast, "open source" software allows for the software to be used, copied, modified, and/or distributed widely so that developers in different locations can access the code to develop and/or refine programs. One of the greatest advantages of open source software, is that there are little to no upfront costs for open-source software.

As alluded to, open source software doesn't mean unfettered access to source code, or license-free use of a program. Open source software allows the software source code (i.e. IP) to be used, analysed, modified and/or distributed. These actions are also subject to certain licence conditions, which are not as restrictive as for closed source software.

As with any type of licence, it is important to understand the type of licence entered into and the obligations associated with that licence. It is advisable for researchers to contact their office of technology transfer (OTT) BEFORE agreeing to any open source software licencing terms, so that the proposed open source license can be closely reviewed and scrutinised by the OTT.

Summarised examples of open source licences include:

- **GNU General Public Licence (GPL)** – permits the licensed software to be copied, distributed and modified (in other words, add or delete functionalities or change portions of the code), but requires that the **WHOLE** new or derivative project be released under the same license. This means that any software developed with any GPL open source component (regardless of its percentage in the entire code) must be released with **its full source code** and with all of the rights to modify and distribute the entire code.

- **Microsoft Public License (Ms-PL)** – though Microsoft is often associated with proprietary software, Microsoft released a free and open source software license for their projects that were released as open source. Users can use, distribute or modify software but may not use any contributors' name, logo, or trademarks to promote their work. This license does not require the sharing of source code (so it is optional) but does require that all IPRs and attribution notices of the original software must be respected.

- **Berkeley Software Distribution (BSD) licenses** – are not very restrictive licenses and permit distribution for any purpose provided copyright notices and the license's disclaimers of warranty are maintained. The use of the names of contributors for endorsement of a derived work requires specific permission/approval from the owners. Furthermore, BSD licenses allow users/companies to distribute derived products as proprietary software without any obligation to share source code to potential competitors.

- **Massachusetts Institute of Technology (MIT) License –** is permissive in that anyone can use, copy, modify and distribute for free or sell the licensed material, provided a copy of the license is included.

- **Creative Commons (CC) licenses –** even though CC licenses are not strictly open source licenses, it is mentioned here since they are commonly used, modified, copied, or distributed for projects. Each of the many CC licenses grant certain rights – like **attribution** (authors must be attributed as the creators of the work); **share alike** (modified works must be distributed under the same CC license); **non-commercial** (work can be used, modified and distributed but not for commercial purposes) and **No Derivative Works** (licensed work can only be copied and distributed but not modified). The way in which these license terms are combined in CC licences determines how restrictive the particular CC license is.

In summary: what is important to note is that while the IP (copyright), i.e. the software source code, can be widely used and/or modified, open source software may have various restrictions through the various open source licenses that have different provisions with resultant consequences.

In is important to note that some license conditions forbid commercialisation of the source code while others may permit it.

When entering into these licenses, the risk(s) should be borne in mind. Examples of risk associated with open source agreements is that it offers no warranty protection on the functioning of the software or possible harm of the software (e.g. affecting the user's device memory). Of particular concern are '**open source infection'** clauses in some open source licenses, which state that the open source code may be used, but that once incorporated into other software, all the software must become open source and licensed as per the open source licensing contract. This point can be illustrated as follows: "*if a developer at a large corporation unwittingly incorporates a small open source software module governed by an infectious open source software license into his company's software, his company's software will consequently become open source and free to users – a prospect that has resulted in many nights of lost sleep to house IP managers"*[8].

5. OPENNESS AND THE IPR ACT

The object of the IPR Act is to make provision for **IP** emanating **from publicly financed research and development** (R&D) to be **identified, protected, utilised** and **commercialised** for the benefit of South Africa's people.[9] This means that IP from publicly funded R&D should first be secured with appropriate IPRs, but also be used and/or commercialised so that these research outputs can have an impact and make a difference in the lives of ordinary citizens.

OTTs at research institutions are tasked with the management of the institution's research outputs of publicly funded IP. The use and/or commercialisation of publicly funded IP involves IP transactions, some of which require approval from NIPMO[10], especially if the IP is commercialised on a royalty-free basis or assigned/transferred to a third party.

[8] WIPO/OMPI: DL450. Open Source and Development
[9] Section 2(1) of the IPR Act.
[10] https://nipmo.dst.gov.za/ Please refer to NIPMO Interpretation Note 2

There may be instances where institutions or researchers who used an open licence to further develop IP are subject to the terms of the open licence. However, NIPMO approval is required if the recipient is licensing on a royalty-free basis[11]. The request for NIPMO approval must be made before the agreement is entered.

6. CONCLUSION

Open science, which promotes public access to public research data, and open innovation, which is aimed at fostering a stronger culture of entrepreneurship by introducing more actors into the innovation process so that knowledge can circulate more freely and be transformed into products and services, must adhere to the principle of "**as open as possible, as closed as necessary**". Open source software has IP protection articulated in the licence conditions that govern the use of the specific source code.

OTTs should put mechanisms and policies in place to advise and educate researchers that intend to use, or are using, open source licenses on the provisions and obligations associated with various open source licences, as well as the concepts of open science and innovation. There are many challenges in adopting an "open" approach for public research outputs, but there are also fantastic opportunities to be unpacked.

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[11] NIPMO Interpretation Note 2: Intellectual Property Transaction Approvals