SFU Open Science Principles – Draft for Community Consultations

Principle 1: Transformation through equitable practice of open science

Principle 2: Open sharing of scholarly knowledge

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Preamble

Open science (OS) is a research practice that makes scholarly knowledge accessible to and benefits all. OS practices include the sharing of knowledge, research processes, methods, data, tools and outputs. Its goals are to eliminate barriers to scholarly information and collaboration. OS enables transparency, accountability and replication, and can accelerate discovery and innovation. Ultimately, OS not only maximizes the impacts of research on society, but also creates a role for society in scholarly pursuits.

This document describes a set of proposed principles for creating an Open Science Framework at SFU. The Open Science Framework will represent SFU's commitment to OS and what it will mean to be an "Open Science University." For the purposes of this document, the definition of "open science" is considered within the broader framework of "open scholarship" and includes not only the scientific disciplines, but also the humanities and social sciences.

This proposal envisions OS as a mechanism for reducing existing inequities and leveraging scholarly knowledge for sustainable development[1]. However, OS practices can perpetuate inequities in scholarship in direct contrast to its purported goals[2]. To achieve the aims of OS, its practice should incorporate a broad range of knowledge across different forms of scholarship and different forms of knowing. Its implementation requires careful consideration of both researcher and institutional responsibilities.

SFU is already engaged in many open scholarship activities including open access, open data, open education, and open innovation initiatives. This document has been created with these existing initiatives in mind and, in particular, is aligned with the SFU Open Access Policy, the SFU Research Data Management Strategy, the SFU Open Educational Resources initiative, the SFU Intellectual Property Policy, and the Public Knowledge Project. The Tri-Council Policy Statement on Ethical Conduct Involving Humans and related ethical frameworks have also been carefully considered. The

strong commitment to [knowledge mobilization](#) and [community engagement](#) will also contribute to the success of OS at SFU.

SFU supports the autonomy of its researchers and recognizes their right to decline participation in research and activities under the SFU Open Science Framework.

The application of these OS principles to external research partnerships, including collaborations with commercial, philanthropic and public sector partners, is encouraged. SFU recognizes that the policies of its partner institutes and organizations may differ and research involving external partnerships may decline participation in the SFU Open Science Framework.

These draft principles have been created with the intention of making scholarly information "as open as possible" and "as closed as necessary"[3]. As best practices for OS implementation differ across different disciplines and forms of knowledge, we recommend the development of best practices specific to different forms of research through a consultation process with relevant stakeholders, guided by these principles. Finally, open science and open scholarship are constantly evolving and these principles will need to be regularly reviewed and revised.

Principle 1: Transformation through equitable practice of open science

To ensure that all persons with an interest in research, regardless of training, origin or circumstance, have equal access and opportunities to contribute to and benefit from scholarly knowledge, SFU is committed to practicing research using open, collaborative, equity-based processes. This includes engagement with and knowledge from non-academic actors, including those from marginalized communities, in shaping both OS practices and the research lifecycle. In particular, research with Indigenous communities is to be done in mutual partnership, where Indigenous research methods are to be prioritized and should inform how OS is practiced. OS as a practice also involves the inclusion of global scholars from less-privileged institutions and knowledge in all languages. It includes the opening up of workflows across various stages of the research lifecycle, including evaluation. Such practices have been referred to as "community science" or "participatory research" and allows SFU's broader community to shape its research.

Principle 2: Open sharing of scholarly knowledge

Scholarly knowledge will be shared openly in accordance with the FAIR (Findability, Accessibility, Interoperability, and Reusability) principles[4]. This knowledge includes the sharing of all materials and resources required to reproduce or verify the research process and its outputs at all points of the research lifecycle. Materials and resources may include data, metadata, educational resources, software, hardware, models, pre-registration plans, pre-print and published manuscripts.

OS efforts spanning the full research lifecycle should be decided during the planning stages of a research project, and should be revised and improved during implementation. In support of Principle 1, opening up research workflows and evaluation processes should be considered. The use of open source tools and hardware in the public domain should be preferred over closed and commercial options. In line with SFU's Open Access policy, scholarly articles by SFU authors should be deposited in SFU's Summit repository. Where resources are, in their original form, not shareable, reasonable efforts should be made to share them (e.g., through anonymization). When resources cannot be made available, the reasons for the restriction should be explained.

Principle 3: Respecting participant autonomy

SFU recognizes participants' rights to decline participation in research and activities under the SFU OS Framework. Participants should not be penalized for declining to participate and should receive the same treatment as participants who opt in to OS activities (e.g., participating in research, receiving remuneration, continuing to receive care in clinical trials)[5].

Principle 4: Respecting the dignity and privacy of research participants

Researchers have the responsibility to do no harm and must practice OS with care. Responsible practice of OS includes respecting participants' rights and duties owed to them through informed consent and appropriate legal and ethical frameworks where open sharing of data could lead to potential harm or risk to the dignity and privacy of research participants. These frameworks include, but are not limited to, Tri-Council Policy Statement on Ethical Conduct Involving Humans, The First Nations Principles of Ownership, Control, Access and Possession (OCAP), and relevant international regulations.

Participants should be provided with enough information to make fully informed decisions about OS participation. For example, they should understand where, how and what data are shared. They should also be informed of what may happen to their data in the future, what mechanisms are in place to withdraw from OS participation in the future and what mechanisms are in place to regulate future use.

All data usage agreements and ownership rights, including all forms of collective ownership, will be respected. Proactive responsibility of care will be taken when data is collected from vulnerable/marginalized communities. Past historical injustices from how data from Indigenous communities have been shared and used will not be exacerbated and new harms will not be created. To this end, responsible OS with Indigenous communities is to be practiced and the CARE Principles for Indigenous Data Governance[6] are to be prioritized.

Principle 5: Ensuring success through institutional commitment and support

SFU is committed to the success of the Open Science Framework by providing the infrastructure necessary to achieve its aims. These include financial support, materials, tools, equipment, incentives, and training for OS activities.

A sustainable financial model will be developed for central support and staffing, commonly-used software and platform licenses, and building out existing and new digital infrastructures.

SFU will provide openly licensed training and educational materials on topics such as i) OS best practices throughout the research lifecycle, ii) understanding and applying relevant frameworks such as OCAP and CARE, iii) commonly used OS tools. Training modules will be provided to OS instructors to support the promotion of OS principles in relevant courses.

Incentives for practicing OS will also be provided, including the recognition of OS resource creation as academic contributions. Support will be made available for departmental and faculty tenure and promotion guidelines to consider the recognition of OS activities. A shift towards alternative metrics and approaches to research evaluation[e.g., 7] is encouraged and especially needed for recognition of OS activities that occur before the end of the research cycle. Institutional grants will be available to support OS initiatives, including those done in partnership with non-academic actors. Funding for activities related to establishing relationships with Indigenous communities and the co-creation of OS practices informed by Indigenous research methods will be made available. Funding will also be made available for SFU researchers, staff and trainees to attend external training and certification programs.

Principle 6: Prioritizing translation with harmonized approaches to intellectual property

SFU will implement these OS principles through the flexible of use of intellectual property (IP) tools, seeking IP protection only when necessary and harmonizing approaches to IP negotiations with OS principles to disseminate knowledge ethically.

SFU has an inventor-owned IP policy. Any SFU member who creates IP under the auspices of SFU owns the IP subject to a narrow set of exemptions. While acknowledging that SFU's inventors maintain control over their IP, SFU encourages the owners of IP not to pursue restrictive IP rights such as patents if they do not intend to commercialize the IP, in order to maximize the use of the scholarly knowledge for the common good. If researchers patent their inventions, SFU recommends that they refrain from enforcing patent rights against other researchers to allow for freedom to practice inventions in academic, and research and development settings.

The sustainability of the research enterprise partially depends on IP commercialization and industry-sponsored research projects, including the transfer of IP from SFU and/or researchers to industry partners. Transfer of IP is not discouraged but should not lead to the monopolization of knowledge by industry stakeholders.

When entering into sponsored research agreements, SFU and its researchers should endeavour to retain the right to use the generated scholarly knowledge for future purposes. SFU will promote the practice of OS to industry sponsors in the course of its IP negotiations to minimize the restrictive use of research knowledge and enable downstream research.

The use of Creative Commons licenses for publications of data and other open licenses such as open-source licenses for software and hardware is strongly encouraged. Imposing terms and conditions on the results may be perceived as barriers to knowledge dissemination. However, such tools protect the creator, ensure that credit is given to the original author, and perpetuate the openness of science. In addition, licensing terms can be used to promote the ethical use of research outputs. Researchers should be cognizant of potential misuse of their research results and prohibit those uses in the licensing terms to the extent possible.

References

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