

Technologies to Operationalize Indigenous Data Sovereignty

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Introduction

Throughout history, data about Indigenous communities, cultures, and territories have been collected and collated through research and surveillance as part of processes of colonisation and assimilation. Settler colonialism occurs not only on the land but also in the academy where the omission of Indigenous leadership in data production positions Indigenous Peoples as objects of study. Limiting the sovereignty of Indigenous communities and removing their right to define themselves has created a deficit-focused narrative that characterises these communities by “5D data” (disparity, deprivation, disadvantage, dysfunction, and difference as set forth by Maggie Walter), and fails to satisfy self-determined data priorities.

Indigenous Data Sovereignty is focused on enhancing Indigenous control of Indigenous data. Western intellectual property systems are organised in ways that recognise authorship and copyright of non-Indigenous scholars and institutions in libraries, archives, and museums with little regard to the Indigenous communities to whom the material belongs. The inability to control the access, use and circulation of Indigenous data is not just limited to Indigenous knowledge but also extends to genetic resources. Examples abound of negative experiences with genetic research such as the unconsented secondary use of genetic data collected from the Havasupai Tribe by an Arizona State University researcher, actions which resulted in various tribes placing bans on genetic research.

The power relations that characterize practices related to Indigenous data are critical issues in the era of “big data” and “open data”. Technological advances like whole-genome sequencing (WGS), which leads to the increased production of high-throughput biological data, are prompting new discussion about the inclusion of digital sequence information (DSI) into the Nagoya Protocol to ensure the benefits arising from the use of biological data--increasingly a global commodity--are equitable and inclusive. In recent years, the Indigenous Data Sovereignty (IDS) movement has articulated the rights of Indigenous Peoples to determine how data derived from or related to them is collected, accessed, analysed, interpreted, managed, disseminated, and reused. The CARE Principles for Indigenous Data Governance (IDG) outline Indigenous principles that should inform data governance and management practices across data-ecosystems.

The IDS movement seeks to reclaim control of both Indigenous data and the narratives the data can be used to create. Recently, work has been done on implementing IDS/IDG principles and articulating what this looks like in practice including alignment with other frameworks like the FAIR principles for scientific data management, and international policy (e.g., UNDRIP and the Nagoya Protocol). Other tools for enhancing control over Indigenous data include Indigenous controlled platforms (e.g., the Mukurtu CMS platform), data trusts, Traditional Knowledge (TK) and Biocultural (BC) labels, and governance entities.

Two seminal books, *Indigenous Data Sovereignty: Towards an Agenda* (2016), edited by Tahu Kukutai and John Taylor and *Indigenous Data Sovereignty and Policy*, edited by Maggie Walter, Tahu Kukutai, Stephanie Russo Carroll, and Desi Rodriguez-Lonebear, provide a foundation for understanding the key concepts and ideas informing this field of thought. The articles in the collection below explore mechanisms and emerging technologies for operationalising IDS (the management of information in alignment with the laws, practices, and customs of the nation-state in which it is located) and IDG (authority over the design, access to, and use of data) creating more ethical research practices, and facilitating equitable access and benefit-sharing.

Indigenous knowledge, Western intellectual property systems, and new metadata methods

- Anderson, J., & Christen, K. (2013). [“Chuck a copyright on it”: Dilemmas of digital return and the possibilities for traditional knowledge licenses and labels](#). *Museum Anthropology Review*, 7(1/2):105–126.
- First Nations Information Governance Centre. (2014). [Barriers and levers for the implementation of OCAP™](#). *International Indigenous Policy Journal*, 5(2), 1-13.
- Anderson, J., & Christen, K. (2019). [Decolonizing attribution: Traditions of exclusion](#). *Journal of Radical Librarianship*, 5(1), 113-152.
- Montenegro, M. (2019). [Subverting the universality of metadata standards: The TK labels as a tool to promote Indigenous data sovereignty](#). *Journal of Documentation*, 75(4), 731-749.
- Liggins, L., Hudson, M., & Anderson, J. (2021). [Creating space for Indigenous perspectives on access and benefit-sharing: Encouraging researcher use of the Local Contexts Notices](#). *Molecular Ecology*, 30(11), 2477–2482.
- Callison, C., Ludbrook, A., Owen, V., & Nayyer K. (2021). [Engaging respectfully with Indigenous knowledges: Copyright, customary law, and cultural memory institutions in Canada](#). *KULA: Knowledge Creation, Dissemination, and Preservation Studies*, 5(1), 1-15.

Toward Indigenous data production and “good data”

- Lovett, R., Lee, V., Kukutai, T., Cormack, D., Rainie, S. C., & Walker, J. (2019). [Good data practices for Indigenous data sovereignty and governance](#). In A. D., M. M., & S. K. D. (Eds.), *Good data*, (pp. 26-36). Institute of Network Cultures.
- Walter, M., & Suina, M. (2018). [Indigenous data, indigenous methodologies and indigenous data sovereignty](#). *International Journal of Social Research Methodology*, 22(3), 233-243.
- Duarte, M. E., Vigil-Hayes, M., Littletree, S., & Belarde-Lewis, M. (2019). [“Of course, data can never fully represent reality”: Assessing the relationship between “Indigenous data” and “Indigenous knowledge,” “traditional ecological knowledge,” and “traditional knowledge”](#). *Human Biology*, 91(3), 163-178.
- Walter, M., Lovett, R., Maher, B., Williamson, B., Prehn, J., Bodkin-Andrews, G., & Lee, V. (2020). [Indigenous data sovereignty in the era of big data and open data](#). *Australian Journal of Social Issues*, 56(2), 143-156.

Indigenous Data Sovereignty and open science

- Tsosie, K. S., Yracheta, J. M., Kolopenuk, J., & Smith, R. W. A. (2020). [Indigenous data sovereignties and data sharing in biological anthropology](#). *American Journal Physical Anthropology*, 174(2), 183-186.
- Carroll, S. C., Garba, I., Figueroa-Rodríguez, O. L., Holbrook, J., Lovett, R., Materechera, S., Parsons, M., Raseroka, K., Rodriguez-Lonebear, D., Rowe, R., Sara, R., Walker, J. D., Anderson,

- J., & Hudson, M. (2020). [The CARE Principles for Indigenous Data Governance](#). *Data Science Journal*, 19(1), 1-12.
- Carroll, S. R., Herczog, E., Hudson, M., Russell, K., & Stall, S. (2021). [Operationalizing the FAIR and CARE Principles for Indigenous data futures](#). *Scientific Data*, 8, 1-6.
 - Chan, V., Gherardini, P. F., Krummel, M. F., & Fragiadakis, G. K. (2021). [A "data sharing trust" model for rapid, collaborative science](#). *Cell*, 184(3), 566-570.

Why and how to benefit-share

- Blasiak, R., Jouffray, J.-B., Wabnitz, C. C. C., Sundström, E., & Österblom, H. (2018) [Corporate control and global governance of marine genetic resources](#). *Science Advances*, 4(6), 1-7.
- Hudson, M., Garrison, N., Sterling, R., Caron, N. R., Fox, K., Yracheta, J., Anderson, J., Wilcox, P., Arbour, L., Brown, A., Tauaii, M., Kukutai, T., Haring, R., Te Aika, B., Baynam, G. S., Dearden, P. K., Chagne, D., Malhi, R. S. Garba, I., Tiffin, N., Bolnick, D., Stott, M., Rolleston, A. K. Ballantyne, L. L., Lovett, R., David-Chavez, D., Martinez, A., Sporle, A., Walter, M., Reading, J., & Russo Carroll, S. (2020). [Rights, interests, & expectations: Indigenous perspectives on unrestricted access to genomic data](#). *Nature Reviews Genetics*, 21(6), 377-384.
- Fox, K. (2020). [The illusion of inclusion – the “All of Us” research program and Indigenous peoples’ DNA](#). *New England Journal of Medicine*, 383, 411-413.
- Ambler, J., Diallo, A. A., Dearden, P. K., Wilcox, P., Hudson, M., & Tiffin, N. (2020). [Including digital sequence data in the Nagoya protocol can promote data sharing](#). *Trends in Biotechnology*, 39(2), 116-125.
- Marcelle, G., Fox, K., & Dasgupta, S. (2021, September 14). [Lessons learned from COVID-19 vaccines could advance synthetic biology. Here’s how](#). *World Economic Forum*.

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