
Key Issues in Mapping Indigenous Knowledge

Session TP1D – Strategizing and Implementing
geospatial policy for ALL



UN-GGIM
UNITED NATIONS
COMMITTEE OF EXPERTS ON
GLOBAL GEOSPATIAL
INFORMATION MANAGEMENT

Second United Nations World Geospatial Information Congress

Theme
“Geo-Enabling the Global Village:
No one should be left behind”

10-14 October 2022, Hyderabad, India

presented on behalf of Dr. D.R.F. Taylor,
Geomatics and Cartographic Research Center,
Carleton University in Ottawa
by Dr. Christy Caudill



Your dedication, expertise and guidance—in geospatial data, methods, frameworks, tools, and platforms—is urgently needed.

The data needs for the SDGs are great, and time is not on our side. Reliable, timely, accessible and disaggregated geospatial information must be brought to bear to measure progress, inform decision-making and ensure effective and inclusive national and sub-national programs that will chart the path towards the 'Geospatial Way to a Better World', to assist in the implementation of the SDGs, and transform our world for the better.

ANTÓNIO GUTERRES, THE SECRETARY-GENERAL OF THE UNITED NATIONS, ADDRESSED THE UN-GGIM DURING THE 1ST UNITED NATIONS WORLD GEOSPATIAL INFORMATION CONGRESS (2018)

CARTOGRAPHIC COLONIALISM

Communities that have been subject to much extraction: data, knowledge, and otherwise

Indigenous Knowledge is increasingly recognized as a parallel and equal knowledge system to that of Western scientific knowledge

It has much to contribute in its own right especially on environmental topics, and is much more than an affirmation of Western knowledge

How then should NMOs proceed?

ETHICAL AND TRUSTFUL
USE OF EO

CARE AND FAIR
PRINCIPLES

INDIGENOUS MAPPING
AS A TOOL TO REALIZE
UN DECLARATION ON
INDIGENOUS PEOPLES
RIGHTS, AND UN SGDs

INSTITUTE RESEARCH-
VALIDATED AND
RIGOROUS METHODOLOGY
OF PARTICIPATORY
MAPPING AND KNOWLEDGE
COPRODUCTION

Ethical and Trustful Use of EO

Be FAIR and CARE.

CARE Principles for Indigenous Data Governance

Collective Benefit
Authority to Control
Responsibility, and
Ethics

Developed in consultation with Indigenous Peoples, scholars, non-profit organizations, and governments

CARE Principles are people- and purpose-oriented, reflecting the crucial role of data in advancing innovation, governance, and self-determination among Indigenous Peoples

CARE Principles complement the existing data-centric approach of FAIR Guiding Principles for scientific data management and stewardship (Findable, Accessible, Interoperable, Reusable)

Ethical and Trustful Use of EO

Be FAIR and CARE.

Concerns about secondary use of data and limited opportunities for benefit-sharing have focused attention on the tension that Indigenous communities feel between:

- (1) protecting Indigenous rights and interests in Indigenous data (including traditional knowledges) and
- (2) supporting open data, machine learning, broad data sharing, and big data initiatives.

Developed by International Indigenous Data Sovereignty Interest Group (within the Research Data Alliance), a network of nation-state based Indigenous data sovereignty networks and individuals

First Nations Principles of OCAP

Ethical and Trustful Use of EO



The First Nations Information Governance Centre

Ownership refers to the relationship of First Nations to their cultural knowledge, data, and information. This principle states that a community or group owns information collectively in the same way that an individual owns his or her personal information.

Control affirms that First Nations, their communities, and representative bodies are within their rights to seek control over all aspects of research and information management processes that impact them. First Nations control of research can include all stages of a particular research project—from start to finish. The principle extends to the control of resources and review processes, the planning process, management of the information and so on.

Access refers to the fact that First Nations must have access to information and data about themselves and their communities regardless of where it is held. The principle of access also refers to the right of First Nations' communities and organizations to manage and make decisions regarding access to their collective information. This may be achieved, in practice, through standardized, formal protocols.

Possession: While ownership identifies the relationship between a people and their information in principle, possession or stewardship is more concrete: it refers to the physical control of data. Possession is the mechanism by which ownership can be asserted and protected.



Equitable Knowledge Infrastructure

In seeking to build a knowledge infrastructure, and to share knowledge, and gain new knowledge and insights – are the ethics surrounding Indigenous peoples included in this?

Rights enshrined in UN Declaration on the Rights of Indigenous Peoples and essential to indigenous peoples' right to self-determination of their economic, political, social and cultural development – that goes beyond economic and cultural development, to include real-time knowledge and data in all its forms

– What are methodologies by which these basic rights are upheld in an actionable way?

– How might these transformative steps lead to real movement on achieving the SDGs and development of community-needs-informed policy?

Rigorous Research Methodologies and Successful Implementation

Participatory Mapping and Knowledge Co-Production

- 2-way dialogue that radically changes the way that mapping and data collection is approached
- local community and Indigenous peoples EO capacity-building for natural and cultural preservation
- Mapping Agencies learn how to grapple with systems of irreducible complexity — Indigenous wisdom has brought to projects knowledge of biodiversity, forest fires, coastal areas, sea ice, and interpretation of data through Systems Mapping

Google Earth in Transition Workshop – NASA and Anishnabee Elders and Community

Cindy Schmidt, NASA Applied Sciences: “This is the understanding we need to accept from other ways of knowing, and different methodologies of knowing. Storytelling methodology of story in data gathering in Indigenous ways of knowing just as important as the data collection from a technical standpoint.”

Melanie Goodchild, Anishnabee and Systems Theorist: “You go on the land and meet with the people; you hear on the land and with the land of the feedback loops of Indigenous Systems Thinking as a relational map-making approach.”

Second Step: Learn the Process by which Indigenous Peoples Relate to their Environment

Interpretive power of Indigenous knowledge in RS

- brings a practical understanding of systems from a starting point of irreducible wholeness
- much more reliable, better data quality, information-rich – more reliable image training with ML
- not only a just approach, but one that is superior in efficacy for meeting the needs of communities, and making real progress on SDGs

The screenshot shows the 'Introduction' page of the Arctic Bay Atlas. The navigation bar includes 'Arctic Bay Atlas', 'Introduction' (selected), 'Spoken Map', 'Quest Map', 'PDF Maps', 'Artists', 'About', 'Welcome', and 'Login'. Below the navigation bar, the page title is 'Introduction'. The main content area features a welcome message: 'Welcome to the Arctic Bay Place Name Atlas'. It describes the project as a community-based atlas for Arctic Bay, Nunavut, involving youth and elders in researching, documenting, and representing their spatial knowledge. The project is a partnership between Nunavut Youth Consulting, the Geomatics and Cartographic Research Centre (GCRC) at Carleton University, and Nunavut Arctic College. The text explains that the atlas includes an interactive spoken map of Inuktitut place names and an interactive map of the 2008 Nunavut Quest. A photograph of Arctic Bay in the fall is shown on the right, with the caption 'Arctic Bay in the fall time - Ron Elliott'. The bottom of the page has a navigation bar with 'Arctic Bay Atlas', 'Introduction', 'Spoken Map', 'Quest Map', 'PDF Maps', 'Artists', 'About', 'Welcome', and 'Login'.

The screenshot shows the 'Spoken Map' page of the Arctic Bay Atlas. The navigation bar includes 'Arctic Bay Atlas', 'Introduction', 'Spoken Map' (selected), 'Quest Map', 'PDF Maps', 'Artists', 'About', 'Welcome', and 'Login'. Below the navigation bar, the page title is 'Spoken Map'. The main content area features a map of Arctic Bay with several red circular markers. A tooltip is visible over one of the markers, displaying the text 'Placename(Ukalilik ᐃᑕᑎᑎᑎᑎ)'. To the right of the map is a detailed information panel for the selected place name. The panel includes the following fields: 'Name (Roman Orthography)' with the value 'Ukalilik', 'Name (Syllabic Orthography)' with the value 'ᐃᑕᑎᑎᑎᑎ', 'Description' with the value 'Abundance of arctic hare.', 'Feature Type' with the value 'valley', 'Sources' with the value 'Arctic Bay Atlas', and 'Hover Sound' with the value 'Media(Spoken place name)'. Below the information panel are three buttons: 'Add Related Item', 'Find on Map', and 'Geometries'. At the bottom of the panel, there are two sections: 'Media (2)' and 'Note (1)', each with a green plus icon.

CYBERCARTOGRAPHY AND KNOWLEDGE CO-PRODUCTION

Moving beyond consultation, and to
engagement, participation, and co-design

PRACTICAL SYSTEMS BASED ON CROSS-CULTURAL INTELLECTUAL AND EPISTEMOLOGICAL EQUALITY

UNEP IPBES framework houses highly participatory aspects and inclusive social-ecological frameworks (local, traditional, and Indigenous knowledge systems) as complementary to academic western scientific disciplines

Indirect provisions—what are referred to as relational, existential, or spiritual value—that are closely-related to the cultural value, and thus suggests that cultural preservation may also play an important role in understanding ES and their scalability

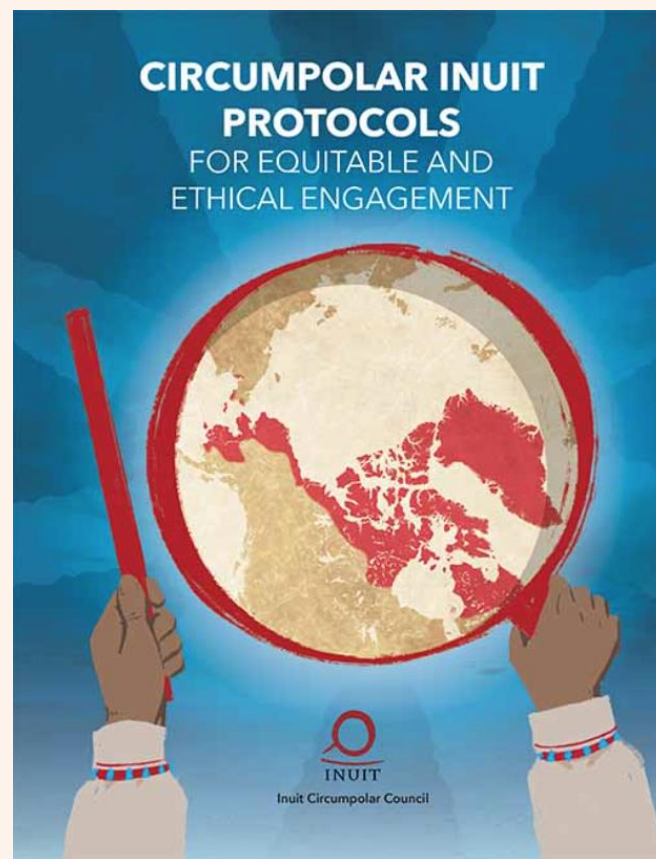
“Conceiving of imagination without sourcing its ecological origin contributes to and extends anthropocentrism consistent with minds unwilling to naturalize to their surroundings.

Worse yet, conceits purporting imagination to have a purely human origin are consistent with preferences for exclusively human environments. Spiritual and intellectual integrity is achieved on Turtle Island by the interplay of human and more-than-human consciousness. The experience of imagination is minding all things.

Minding all things performs the spiritual conservation of all things. All things comprise the Indigenous mind and Indigenous minds are composed of all things.”

Sheridan and Longboat, 2010

Circumpolar Inuit Protocols for Equitable and Ethical Engagement



Inuit Circumpolar Council (ICC)

8 protocols for engagement include:

1. Nothing About us Without us
2. Recognise Indigenous Knowledge in its Own Right
3. Practice Good Governance
4. Communicate with Intent
5. Exercise Accountability - Building Trust
6. Build meaningful partnerships
7. Information and Data Sharing, Ownership and Permissions
8. Equitably Fund Inuit Representation and Knowledge

Although written from an Inuit perspective these protocols have wider applicability.

Co-Design and Knowledge Co-Production

From Data-Centric, to Human-Centric

Foster discourse around the urgent need for equitable knowledge exchange in a growing digital knowledge infrastructure

Co-creation of knowledge is important, but not enough
Perspective that mapping must first and foremost meet the needs of Indigenous peoples – the definition and control of that mapping must reside with these groups in the first instance, not with the NMO who have a secondary role

Defining “Authoritative” Map and Data Types

For Indigenous people, qualitative data is authoritative data
NMOs deliver the authoritative base maps and data, but it is within the realm of self-determination for Indigenous peoples to have control over narrative, place names, symbols, and data and its use

Giving Precedent to Indigenous Worldviews

Sought as systems that hold various dimensions (e.g., technical and scientific knowledge; Systems Thinking Complexity Theory); Indigenous people’s narrative or non-linear organization of knowledge can be represented spatially through multi-modal participatory mapping and thus encourages an autonomous decision-making and land management

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