



ARCTIC
SDI Arctic Spatial
Data Infrastructure

ARCTIC SDI

STRATEGIC PLAN 2020 – 2025

A collective work by the national mapping agencies of the eight Arctic countries: Canada, Finland, Iceland, Norway, Russia, Sweden, United States of America and the Kingdom of Denmark

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Approved by the Arctic SDI Board

Strategic Plan Overview

The Arctic SDI *Strategic Plan 2020 - 2025* is a high-level overview of the background, organization and philosophy of the Arctic SDI. It provides the vision, mission and guiding principles of the cooperation, cites trends that may empower the vision, and identifies the primary strategic objectives over the five year span from 2020 to 2025.

A *Roadmap & Implementation Plan* has been developed to provide details on where and how the Arctic SDI resources will be focused to contribute to the development of the spatial data infrastructure for the Arctic. The *Roadmap and Implementation Plan* is focused on actions necessary to accomplish the objectives of this strategy and achieve anticipated outcomes through Arctic SDI working group activities and actions of partners and stakeholders including diverse Arctic data providers and users.

In addition, the *Arctic SDI Memorandum of Understanding*, the *Arctic SDI Governance Document*, *Arctic SDI Framework Document* and *Arctic SDI Strategic Plan 2015 - 2020* provide thorough documentation on the background, history, specifications and the governance.

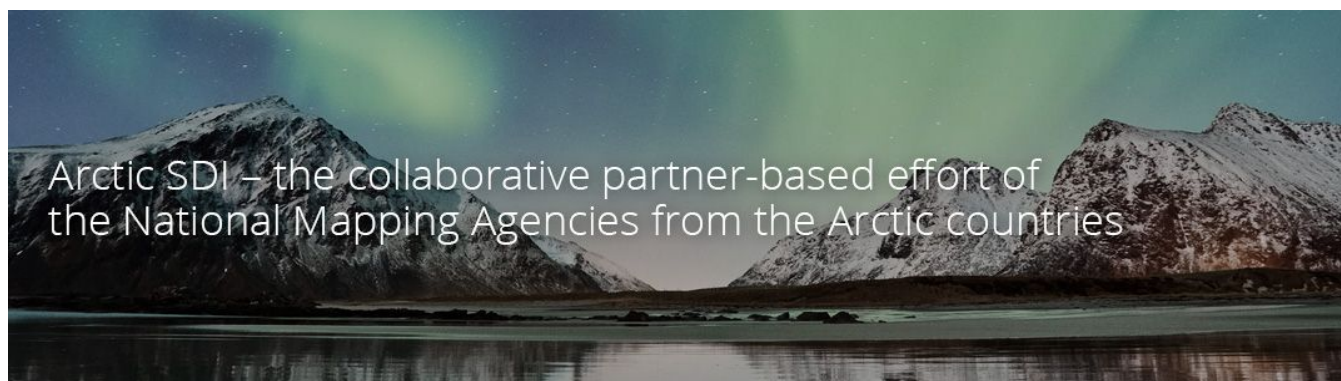
Arctic SDI National Mapping Agencies

- Canada Centre for Mapping and Earth Observation, Natural Resources Canada
- Danish Agency for Data Supply and Efficiency
- National Land Survey of Finland
- National Land Survey of Iceland
- Norwegian Mapping Authority
- Federal Service for State Registration, Cadastre and Mapping of the Russian Federation
- Swedish Mapping, Cadastral and Land Registration Authority
- United States Geological Survey

Arctic SDI and the Arctic Spatial Data Infrastructure

The **Arctic SDI** is a collaborative initiative of the National Mapping Agencies of the eight Arctic nations with a goal to promote partner-based development of an **Arctic spatial data infrastructure**. The aim of the infrastructure is to allow access to interoperable data and tools supporting monitoring and decision making for politicians, governments, policy makers, scientists, private enterprises and citizens in the Arctic.

The National Mapping Agencies provide authoritative, reliable and interoperable data from their own holdings. As a collaborative initiative, the Arctic SDI can facilitate and enter into partnerships to deliver access to data from other reliable authoritative sources to ensure that spatial data is easier for Arctic stakeholders to access, validate and combine with other data.



The Arctic SDI is endorsed by the Arctic Council Senior Arctic Officials (SAO) and is part of the general scientific and technical collaboration among the Arctic nations to address common problems and ensure a common understanding and adequate response to the rapidly changing Arctic.

The Arctic SDI has established an effective model of cooperation on spatial data exchange and made demonstrable contributions to the Arctic Spatial Data Infrastructure under its initial *Strategic Plan 2015-2020*. A few achievements include development of the [Arctic SDI Website](#), the Arctic SDI Geoportal supporting four languages and six Arctic projections, services such as embedded maps, the Metadata Catalogue, delivery of the Arctic SDI Topographic Basemap and the Circumpolar Gazetteer. The collaboration has also established partnerships that include the Arctic Regional Marine SDI Working Group (ARMSDIWG) and has contributed to the development of the Arctic Digital Elevation Model ([ArcticDEM](#)) through outreach activities with valued partners.

Guiding Principles

The following guiding principles are used to assess potential activities and priorities when formulating, communicating and implementing the strategy of Arctic SDI:

- **User and community driven:** We are all stakeholders and the spatial data infrastructure must reflect user needs and challenges as well as technical and data developments.
- **Contribute to solutions:** Add value in line with requirements of Arctic stakeholders.
- **Open and interoperable:** Capitalize on previous spatial data infrastructure work. Adhere to open data principles and the evolution of international standards.
- **Partnerships:** Engage with partners to develop and sustain the spatial data infrastructure for the Arctic.
- **Leverage Existing Investments:** Incorporate on-going activities that contribute to outcomes.
- **Flexible:** Acknowledge that the ability to deliver may vary in time frame and between stakeholders.

Arctic SDI Vision and Mission 2020 - 2025

Vision: Facilitate reliable and interoperable access to geospatial information in support of social, economic and environmental monitoring and decision-making in the Arctic.

Mission: To promote the cooperation and use of the Arctic Spatial Data Infrastructure, enabling sharing of Arctic location-based data, while pursuing data management best practices and value creation.

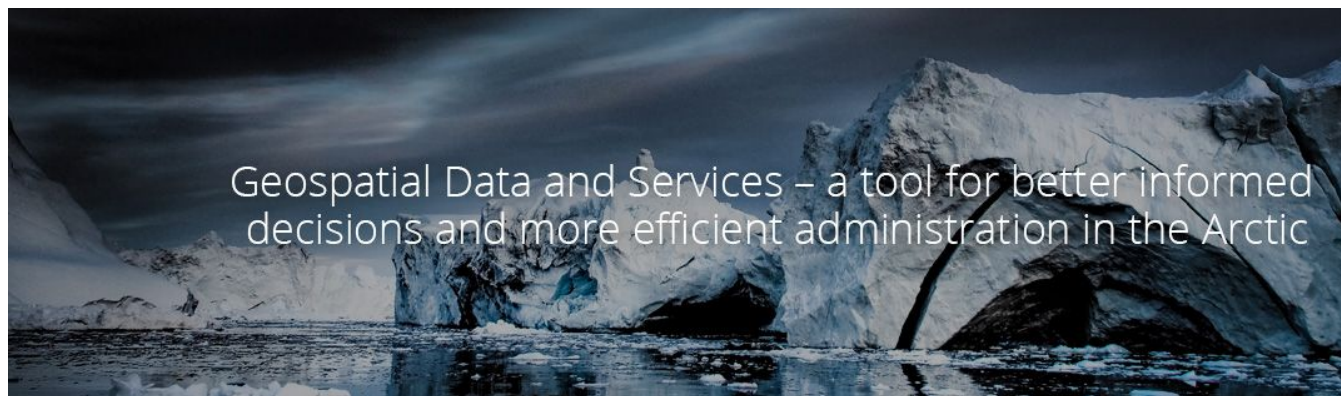
Arctic SDI in the Global Context: Trends and Policy Drivers

The Arctic is dramatically changing and the eight Arctic nations coming together with a coordinated approach around common standards and goals is critical at this time. Standards and best practices ensure that data comes together in a way that's meaningful, authoritative, and accessible in close to real-time. Arctic SDI is an example of scientific collaboration in action, providing data to help guide complex conversations among the circumpolar community. This Arctic SDI strategy is intended as a call to action to build a digital arctic; an approach that will require stakeholder and partner engagement.

Earth systems are driven by feedback loops over land, in the sea and in the atmosphere. The effects of these feedback loops are magnified in polar regions which in turn affect the globe. Evidence of current and future Arctic changes include: increased absorption of heat into land and water due to lost snow and ice cover, significant increase in greenhouse gases due to the release of methane from melting permafrost, increased weather variance and associated extreme events in conjunction with rising sea levels and changes to atmospheric and ocean currents. These consequences are underway, and scientists need data to provide decision makers with the information that is critical to respond.

Arctic Change impacts many aspects of Arctic life: Melting ice and permafrost increase environmental and safety concerns with marine navigation in unsurveyed waters and impacts to roads, building and port infrastructures. Changes impact many facets of Arctic life affecting living conditions for a rich Indigenous culture, diverse wildlife, food security and the capacity to adapt. The Arctic is one of the most valuable regions on the planet, which gives us all reason to care about the environmental, social and economic impacts on this region.

Technical Trends and Geomatics: Informatics in general and geomatics specifically are evolving quickly. Geospatial standards, cloud and other technologies offer multi-dimensional methods to accommodate various implementations of space, time, movement and science to enable an analytical digital arctic over land and sea. Trends are identified and assessed as to what can be reasonably implemented such as solutions for data access in a limited, expensive or no Internet connectivity environment.



Arctic SDI Strategic Objectives (2020 - 2025)

There are many stakeholders in the Arctic and outreach and partnership activities are key to understanding the diversity of long-term stakeholders in the region and around the world.

The National Mapping Agencies (NMAs) work collaboratively to reach common goals, establish effective cooperation and partnerships between stakeholders to build a multilateral base for national and regional geospatial data exchange in the Arctic. The Arctic SDI is a long-term investment managed through strategic activities to provide ongoing improvements and enhancements. Together, the NMAs are focused on building the infrastructure, working as colleagues towards outcomes that enable Arctic stewardship and facilitating data driven decision-making.

The Arctic SDI's key stakeholders are the Arctic Council and its Working Groups and the Arctic SDI provides bi-annual reports of accomplishments, goals and priorities, including partnerships, to the Arctic Council through the Conservation of Arctic Flora and Fauna Working Group (CAFF).

The Arctic SDI and the Arctic Regional Hydrographic Commission and its Marine SDI Working Group (ARMSDIWG) have actively merged the efforts of the sea and land mapping agencies to drive the development of the Arctic SDI Basemap and contribute to the development of the spatial data infrastructure for the Arctic.

Arctic SDI also continues to pursue coordination and partnership activities with other key organizations to facilitate bringing together authoritative basemap and reference data. These organizations include the Arctic Data Committee, World Meteorological Organization, US National Snow and Ice Data Center, the University of Minnesota Polar Geospatial Center and others.

Accepting its role in the development of a regional spatial data infrastructure, the Arctic SDI is building on international standards and existing spatial data infrastructures, aligning its activities with the work of international organizations like the UN-GGIM, ISO, OGC, GEOSS, European Union's Infrastructure for Spatial Information in the European Community, Canadian Geospatial Data Infrastructure, the US National Spatial Data Infrastructure and the Russian National Spatial Data Infrastructure.

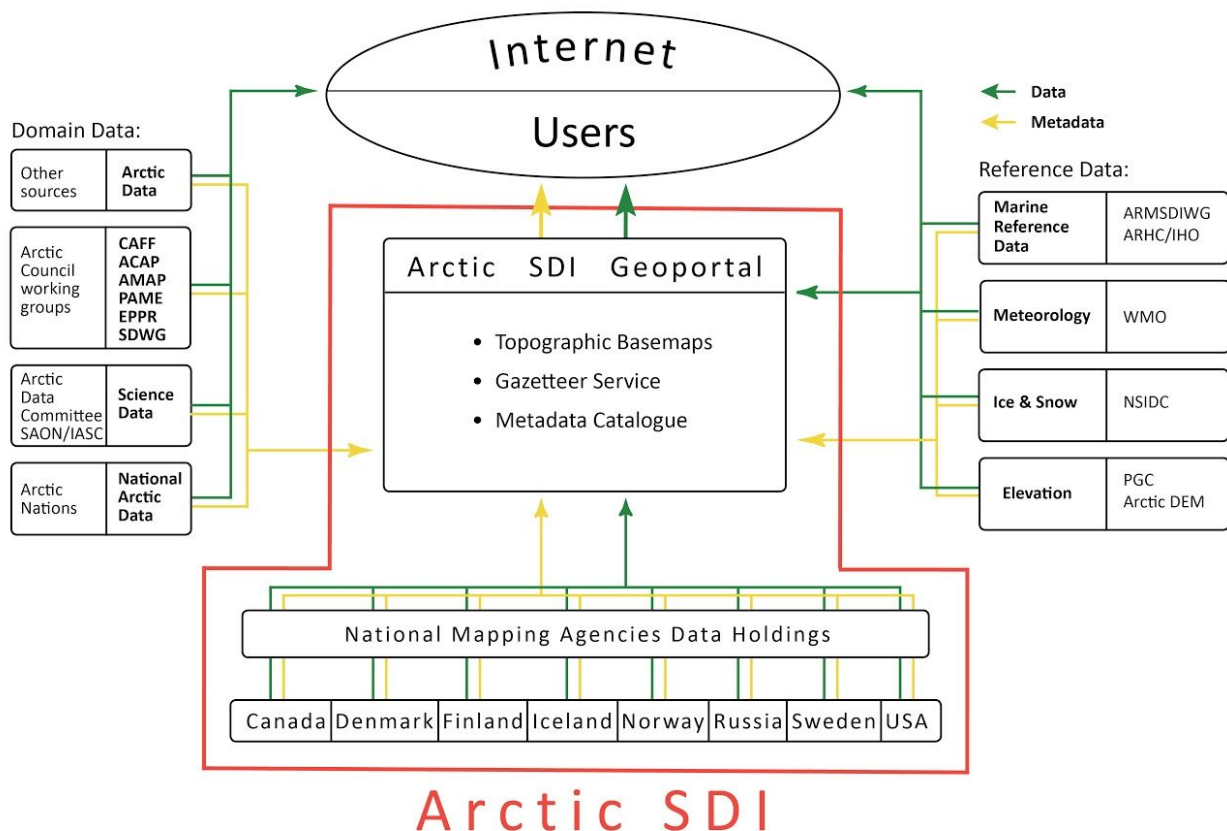


Figure 1: Data and Services schematic for an Arctic Spatial Data Infrastructure. This figure highlights how data is accessible via the Internet, across stakeholders and within the Arctic SDI Geoportal..

The Arctic SDI objectives provided in the table below and the accompanying *Arctic SDI Roadmap and Implementation Plan for 2020-2025* document the intentions of the Arctic SDI collaboration. These objectives and their associated actions will focus on efforts to ensure the sustainability of our operations, communicate easy access to our services like the Geoportal, topographic basemap and Circumpolar Gazetteer while working to establish additional authoritative data services from the holdings of our NMAs and other key partners.

Objective	Title	Anticipated Outcomes
Objective 1	Promote Data and Service Availability	Well-developed and maintained Arctic SDI services are seen as an important contribution to a coherent spatial data infrastructure. Increasing the availability of reliable and relevant authoritative spatial data in the Arctic by securing access to the most important reference data for the Arctic region is another key outcome. Together this will support the development of a multidimensional digital Arctic where data is easy to find, interpret and use by humans, machines or applications.
Objective 2	Promote Interoperability	Across the Arctic there is increased data sharing and interoperability based on international standards to ensure that data, including geospatial and non-geospatial scientific and statistical data from multiple sources, can be easily combined to help address challenges in a changing Arctic.
Objective 3	Strengthen Engagement	A growing understanding of the concept “We are all Stakeholders,” based on a deeper insight of the needs and requirements of Arctic data providers and users, increased awareness of how to participate with an understanding of the roles and responsibilities necessary to develop an effective and socially valuable spatial data infrastructure for the Arctic. This will result in a relevant supply and demand of standards based Arctic data and appropriate use of available data management tools.
Objective 4	Amplify Communication Channels	Arctic SDI is perceived as a serious and reliable partner with consistent messages and deliverables that are understood and create value for the Arctic stakeholders. A suite of informative material and guidelines on data management best practices and standards is in place. Communications with the administrative and political stakeholders is closely coordinated with Arctic SDI partner organizations.
Objective 5	Further Governance and Business Processes	Arctic SDI services are widely used, partnerships and outreach activities are run efficiently, cost effectively and capitalize on previous national as well as international spatial data infrastructure work. The National Mapping Agencies bring together experts to extend domestic data holdings and incorporate on-going activities. The Arctic SDI benefits from and contributes to the development of the global spatial data infrastructure.

Table 1: Strategic Plan 2020-2025 objectives

References

Acronym List

ADC	Arctic Data Committee
API	Application Program Interface
ARHC	Arctic Regional Hydrographic Commission
ARMSDIWG	Arctic Regional Marine Spatial Data Infrastructures Working Group
CAFF	Conservation of Arctic Flora and Fauna
CGDI	Canadian Geospatial Data Infrastructure
ELF	European Location Framework
GEOSS	Global Earth Observation System of Systems
GBIF	Global Biodiversity Information Facility
INSPIRE	Infrastructure for Spatial Information in Europe
IASC	International Arctic Science Committee
IHO	International Hydrographic Organization
IM	Information management
ISO	International Organization for Standardization
KPI	Key performance indicator
MOU	Memorandum Of Understanding
NMA	National Mapping Agency
NSDI	National Spatial Data Infrastructure (USA)
OGC	Open Geospatial Consortium
SAO	Senior Arctic Officials in Arctic Council
SAON	Sustaining Arctic Observing Networks
SDG	Sustainable Development Goals
SDI	Spatial Data Infrastructure
UN	United Nations
UN-GGIM	United Nations Global Geospatial Information Management

Additional Resources

Arctic SDI Website: <http://arctic-sdi.org/>

Arctic SDI Geoportal: <https://geoportal.arctic-sdi.org>

Arctic SDI Fact Sheet: https://arctic-sdi.org/wp-content/uploads/2018/10/Arctic-SDI-factsheet_0918.pdf

Arctic SDI Geoportal Fact Sheet:

https://arctic-sdi.org/wp-content/uploads/2018/10/Arctic-SDI-Geoportal_0918.pdf

Arctic SDI Glossary of Terms:

<https://arctic-sdi.org/wp-content/uploads/2017/05/Arctic-SDI-Glossary-of-Terms-Version-1.0.pdf>

Arctic SDI Documentation: <http://arctic-sdi.org/index.php/strategic-documents/>

Arctic SDI Signed MOU:

http://arctic-sdi.org/wp-content/uploads/2014/07/Appendix1_Signed-ALL-Lang-MOU_5-29-14.pdf

Arctic Council Website: <http://www.arctic-council.org/index.php/en/>

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