ARCTIC SDI
Arctic Spatial Data Infrastructure

Panel #4 – Enabling Regional Collaboration and Applications

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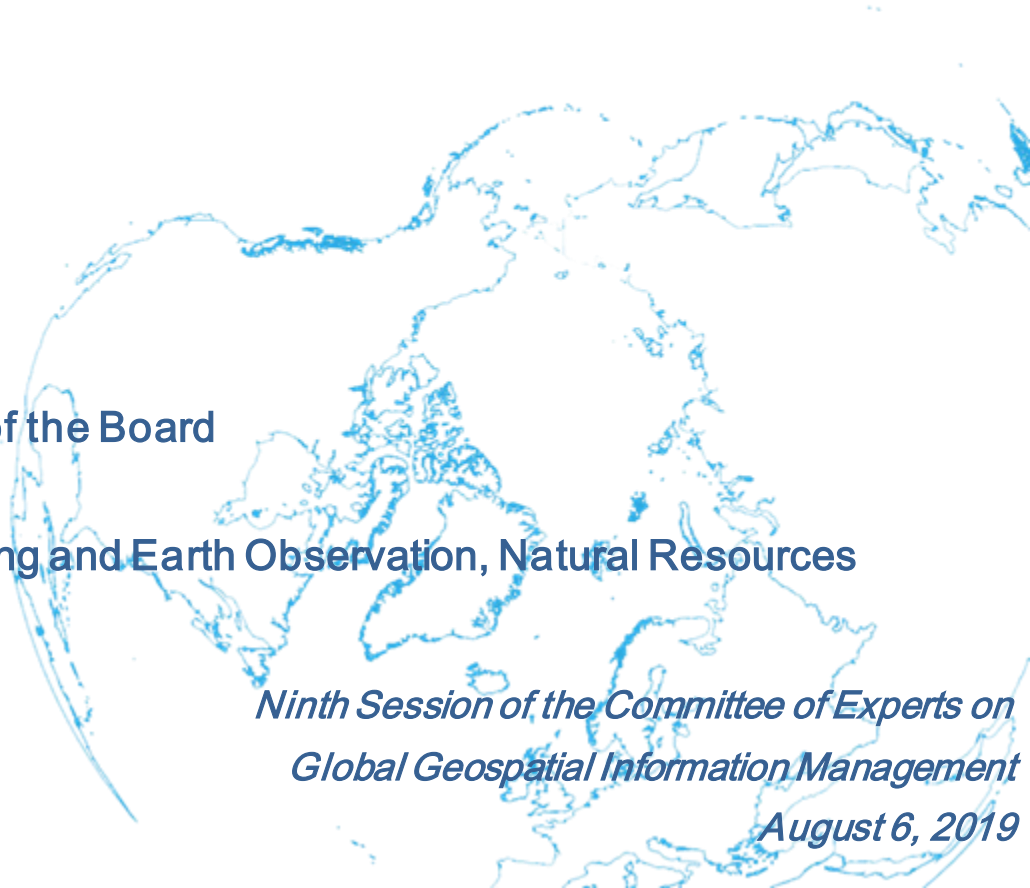


Ninth Session of the Committee of Experts on Global Geospatial Information Management

August 6, 2019

ARCTIC SDI Arctic Spatial Data Infrastructure

arctic-sdi.org

A Model of Effective Collaboration

Arctic SDI is:

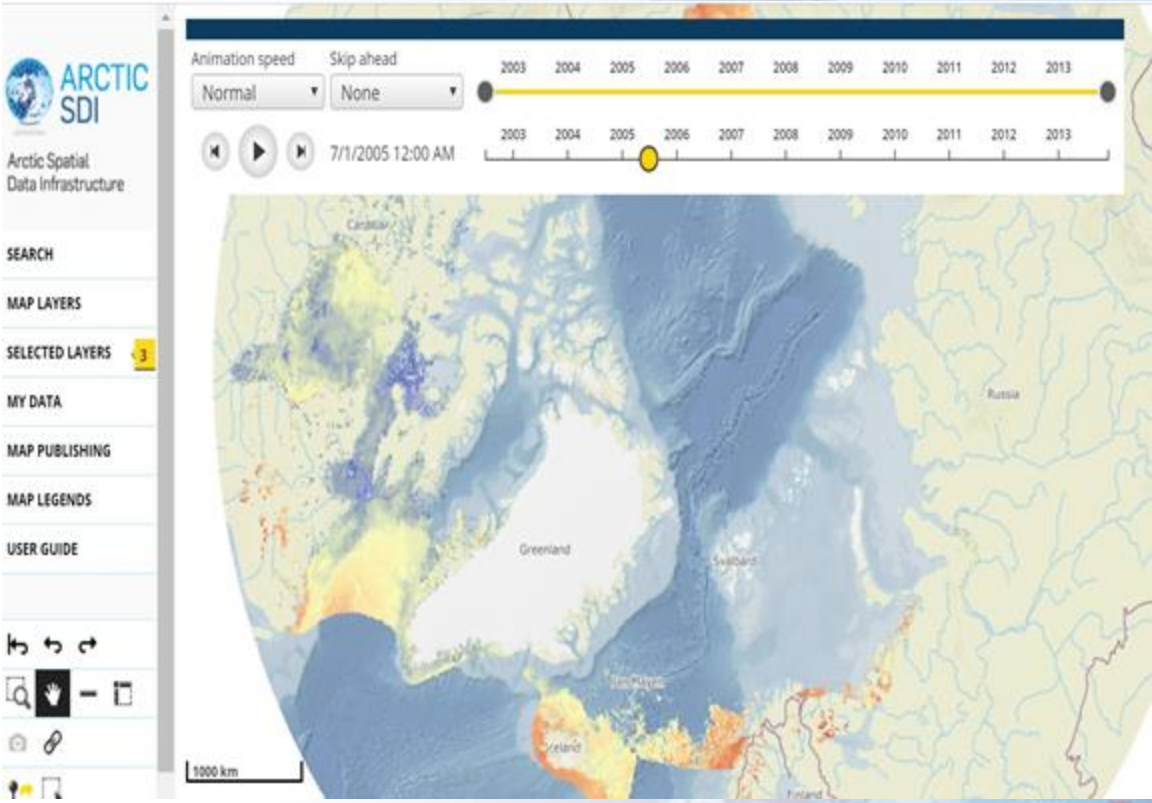
- a voluntary collaboration of the eight circumpolar National Mapping Agencies
- supported by a non-binding Memorandum of Understanding (MOU) in 3 languages
- based on foundations of solid governance and standards
- endorsed by the Arctic Council
- recognized by Senior Arctic Officials for improving data integration, sharing and analysis across the Arctic.

- Video https://youtu.be/tGS1rcaJRug

http://wallpaper.imcphoto.net/animals/polar-bear/polar-bear-on-ice.jpg

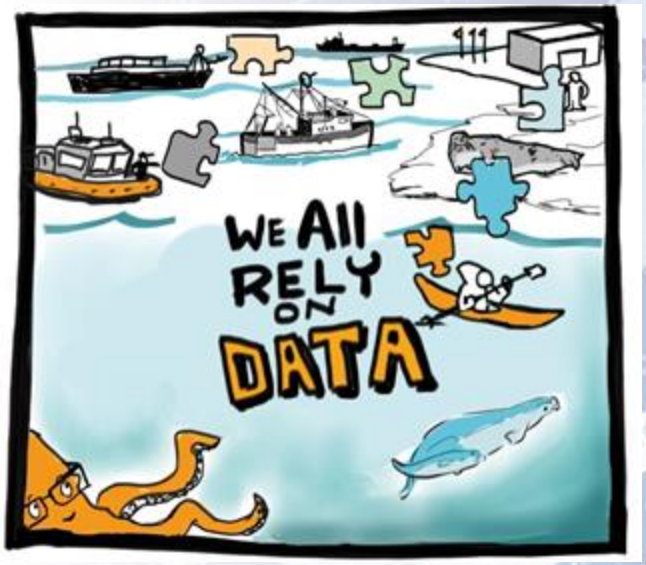
Arctic Council Requirement: Ecosystem-based monitoring across borders

- A network of networks of data feeds from land, sea, & science communities
- OGC, ISO & IHO standards compliant data feeds
- Arctic-SDI GeoPortal
  - Time series data support
  - Circumpolar place names: Roman, Syllabics and Cyrillic characters
  - 6 polar projections
  - Seamless topographic service
  - Embed a map function (API)
  - GeoPortal application (Oskari) is standards based and code is open source



We Are All Stakeholders

- Ecosystem-based analysis requires seamless sharing of data across jurisdictions and organizations.

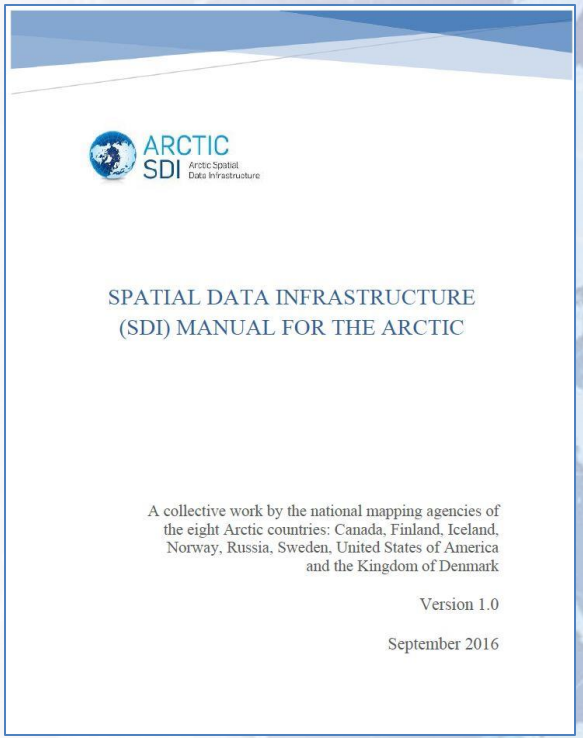


Source: blogs.vmware.com

- Arctic SDI is providing shared tools and information management practices to Arctic Council WGs to break down silos.
- Arctic SDI brings together the National Mapping Agencies, trusted map data and geospatial data expertise.

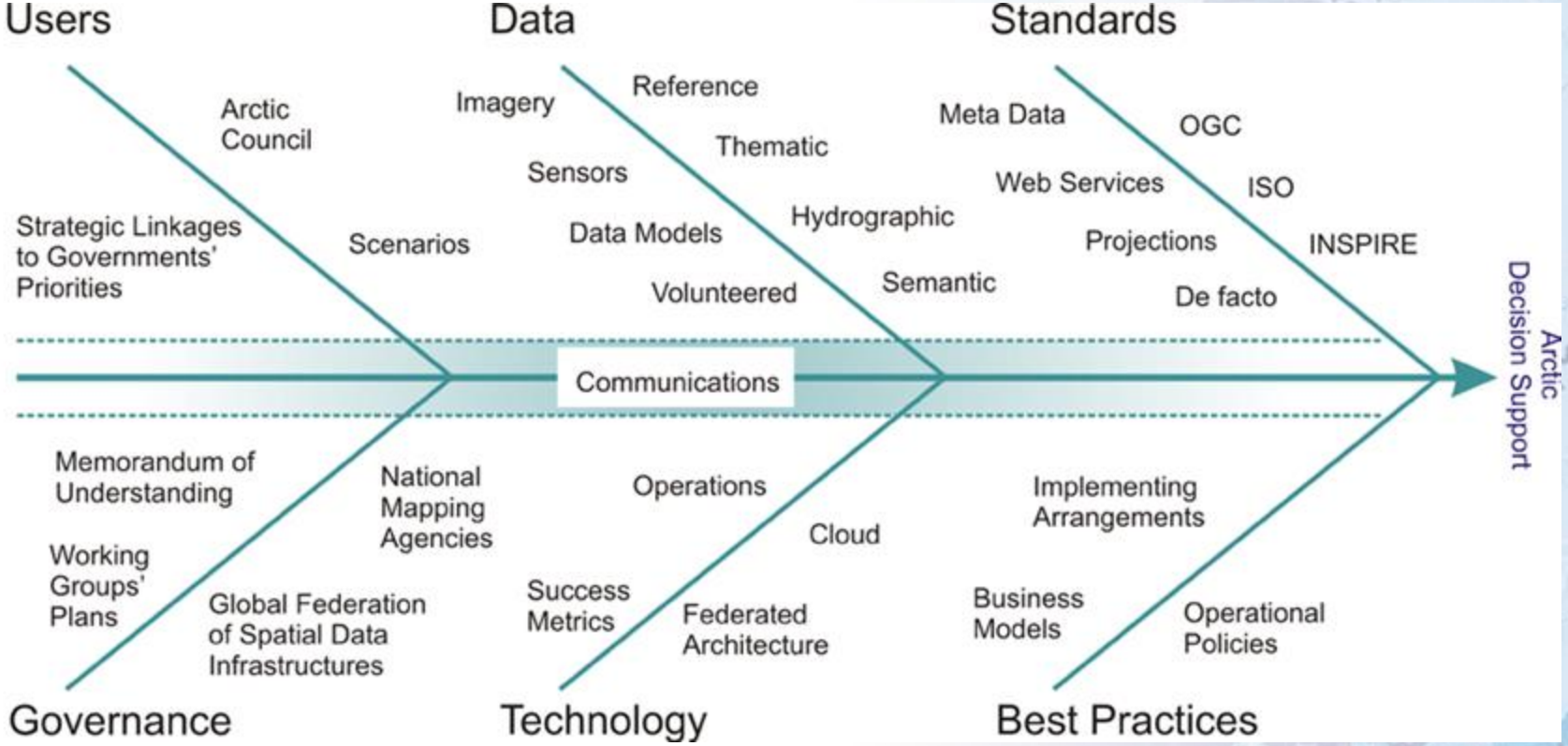
Policy Instruments

- MoU based voluntary contributions without legal implications
- Small scale, privacy issues not evident
- Direct client engagement
- User Needs Analysis rigor
- SDI assessment framework supported by key performance indicators
- Glossary of terms used to minimize misunderstandings of interpretation
- Excellent collegiality – agencies contribute based on their strengths and resources
- *The glue of successful regional SDI implementation is governance and standards*



The SDI Manual for the Arctic describes data management practices and guidelines for efficient monitoring and decision making in the Arctic.

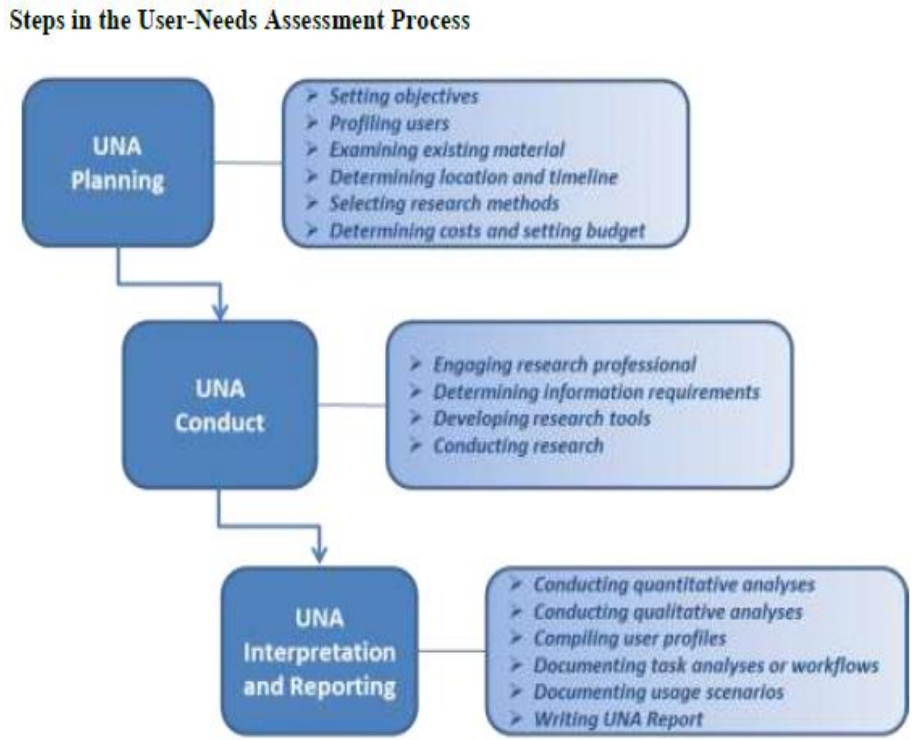
Key Policy Instrument and Methodology 1: Building on a common vision over time



Key Policy Instrument and Methodology 2: User Needs Assessments

- A **user needs assessment (UNA)** is a process of discovering and assessing the needs of users by taking into account their ideas, attitudes, wants and preferences on a particular issue.
- A UNA will help organisations set priorities and make decisions about a program, application or system, or the allocation of resources.
- The research methods used, either qualitative or quantitative, will depend on the type of information required, attitude information or behavioral information.
- Two Arctic SDI UNAs were contracted to gather the needs of users and data providers. This resulted in two reports:
  - *Environmental Scan on User Needs Assessments for the Arctic SDI* with a focus on Indigenous communities,
  - *Better Access to Geospatial Marine Data*.

The UNA process is typically carried out in three phases:



Policy Instruments and Methodology 3: Evaluation Framework and Key Performance Indicators (KPIs)

A SDI evaluation is used to assess if the SDI realizes the intended objectives and benefits by providing a snapshot of its current state.

A SDI evaluation (a detailed "**audit**") is performed to:
- Obtain more knowledge about SDI functioning (performance),
- Determine if the SDI is on the intended track of development,
- Assist SDI development, and
- Determine accountability.

A KPI is "a measurable objective which provides a clear indication of service centre capability, quality, customer satisfaction, etc."

In the Arctic SDI context, nine KPIs were developed to gauge the effectiveness of the implementation of the Arctic SDI Strategic Plan 2015-2020, as well as the effectiveness of the Arctic SDI itself.

KPIs are providing on a yearly basis a regular and accessible reporting tool - a short **KPI Report Card** - to the Arctic SDI Board

Table 1: KPIs by Board Reporting Themes with linkages to the Strategic Plan and Evaluation Framework.

2015-2020 Arctic SDI Strategic Plan Objectives		Board Reporting Themes	KPIs	Evaluation Framework Components
Address Needs of Arctic Council and other data users and providers	Communications	Outreach and Communication	• 1. Number of accesses to the Arctic SDI Website • 2. Number of outreach and capacity building activities • 3. Number of times the Arctic SDI is mentioned externally	• Organizational readiness • Capacity Building
	Provide Reference Datasets	NMA Services	• 4. Number of relevant and validated NMA reference datasets that are available through the Geoportal	• Data and Information Environment
	Provide Thematic Datasets Provide Reference Datasets	External Data	• 5. Number of relevant and validated external datasets that are available through the Geoportal	• Data and Information Environment
	Data and Technical Interoperability	Geoportal	• 6. Number of applications using the Arctic SDI and its Geoportal tools • 7. Number of accesses to Arctic SDI central services • 8. Number of data providers publishing metadata in the Arctic SDI Metadata Catalogue	• Arctic SDI Geoportal • Standards • Information Infrastructure
	Spatial Operational Policies	Business Processes	• 9. Number of times that Arctic SDI guidelines are used	• Organizational readiness

Policy Challenges:

- Collaboration takes years & may not be in pace with pressures on environment, societies & economies

- The diversity of sovereign legal systems constrains development of regional SDI legal frameworks. Hence focus is on common policy needs, development and communication. Development of regional legal frameworks are high level of effort with low reward.

- Language and nuances of words can create well-meaning, yet circular discussions. A Glossary of Terms is a need.

- Scope may oscillate based on individual perspective and nations' cultures, for example in Arctic SDI conversations range
  - from promoting a nation's topographic data
  - towards an analytical multi-dimensional Digital Arctic

Policy Challenges:

How do we explicitly link the richness of regional SDI data and services to Sustainable Development country level reporting?

Should regional SDIs have more socio-economic data?

Should SDGs be ecosystem based?

Arctic Spatial Data Pilot – Standards Framework

- The Arctic Spatial Data Pilot defined land and sea climate change scenarios to break down *information management silos* with technical piloting activities:
  - Videos showcase how standards are deployed for predictive analytics (e.g. permafrost loss and slope stabilization models).
  - http://www.opengeospatial.org/projects/initiatives/arcticsdp
- Demonstrated Standards bodies are a contributing element of Legal and Policy Frameworks.
- Standards agencies include governance, processes and networks of highly qualified people.
- Open standards + Open data = Open Science

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