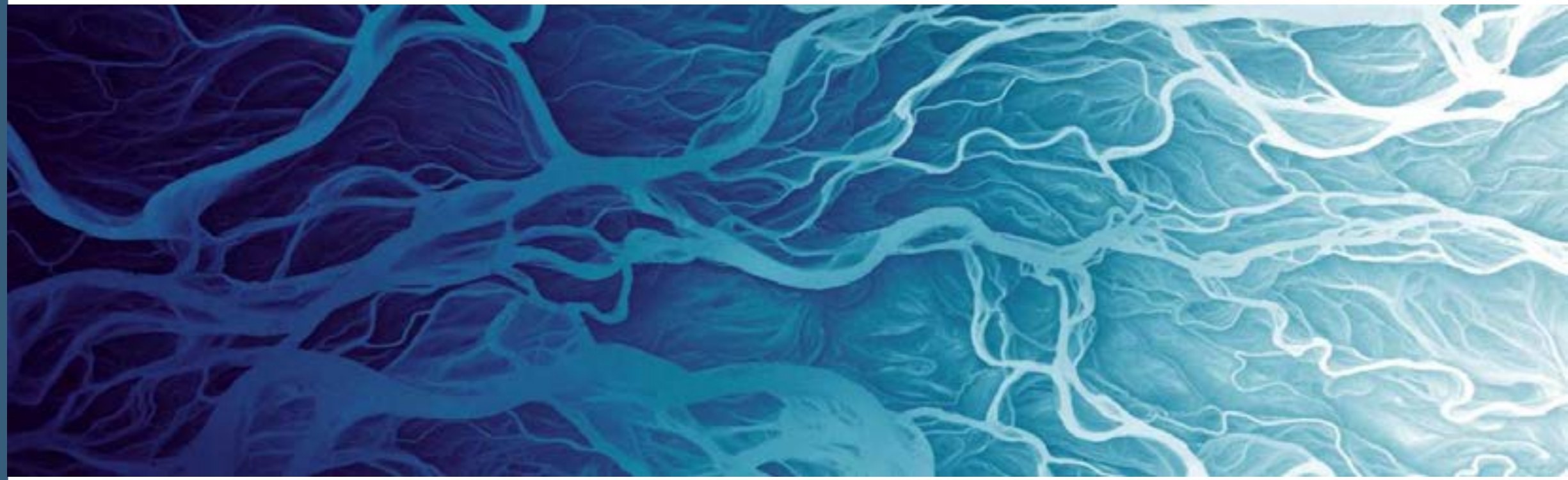
Connecting the Landscape: Advancing Mapping, Data Access and Stewardship Across Alaska



Leslie Jones, PhD
Geospatial Information Officer
State of Alaska | Alaska Geospatial Office

MAPAK
ALASKA GEOSPATIAL OFFICE

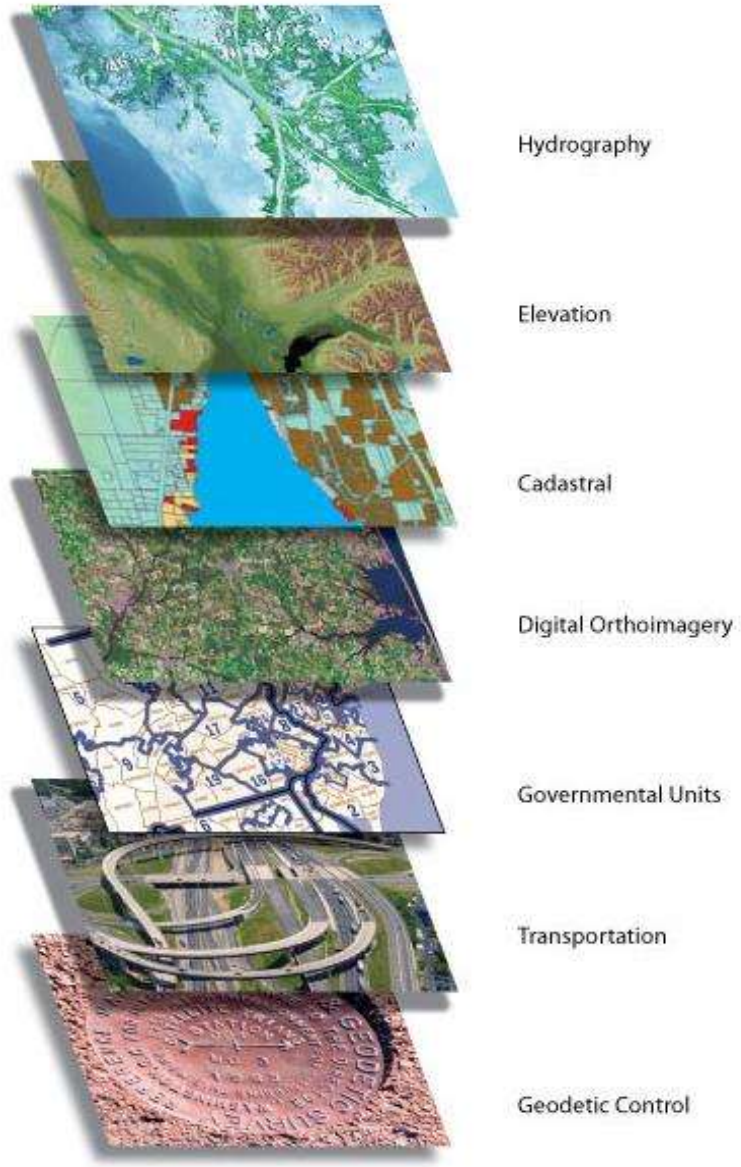
Alaska Geospatial Office's Mission to Make Data FAIR

DATA GAPS AND CURRENCY → STREAMLINE DISCOVERY AND ACCESS

Realized Importance of Accurate and Current Data

Real World →

Reality →



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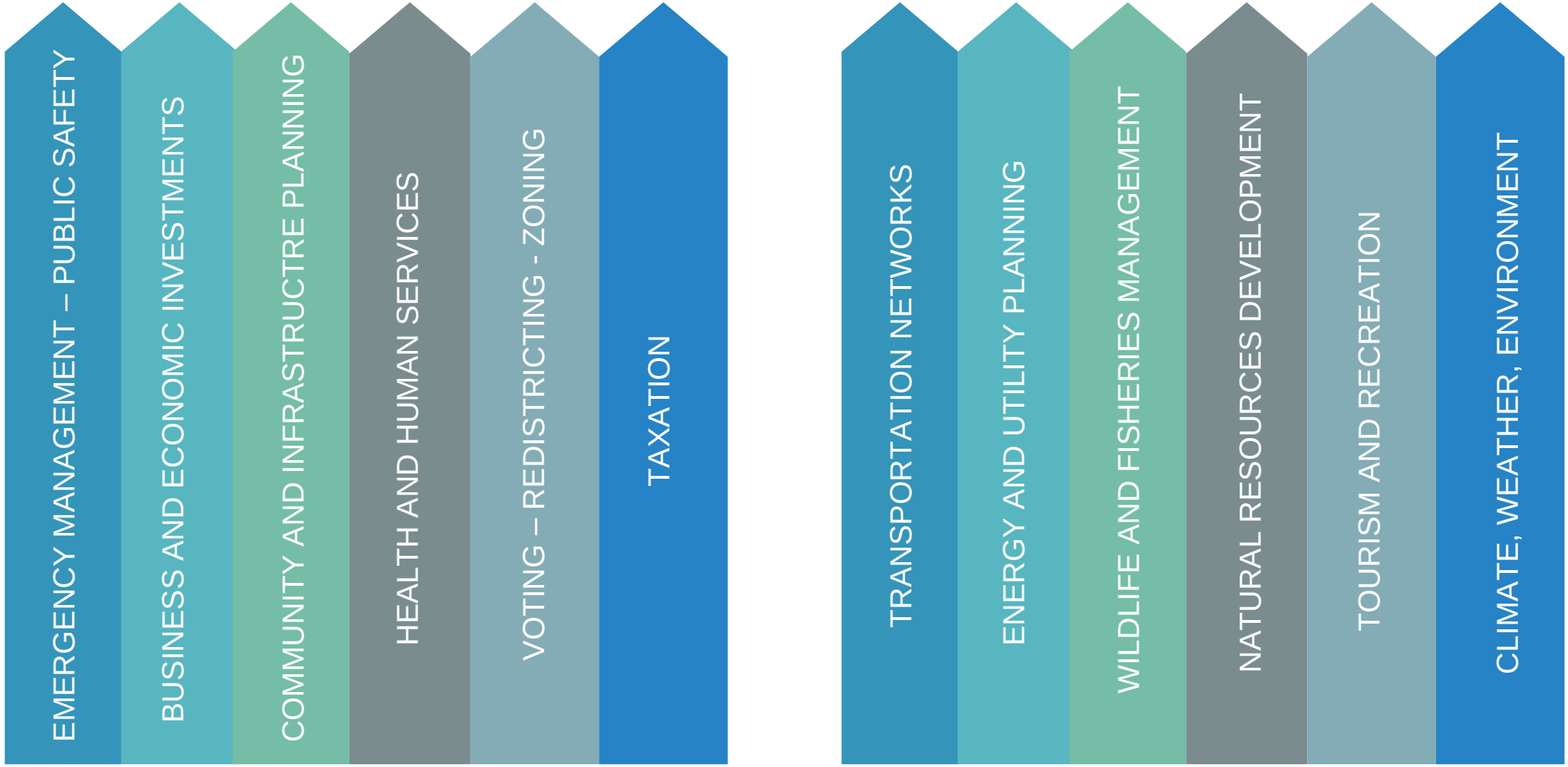
Real World Implications

TIME – COSTS – BAD DECISIONS



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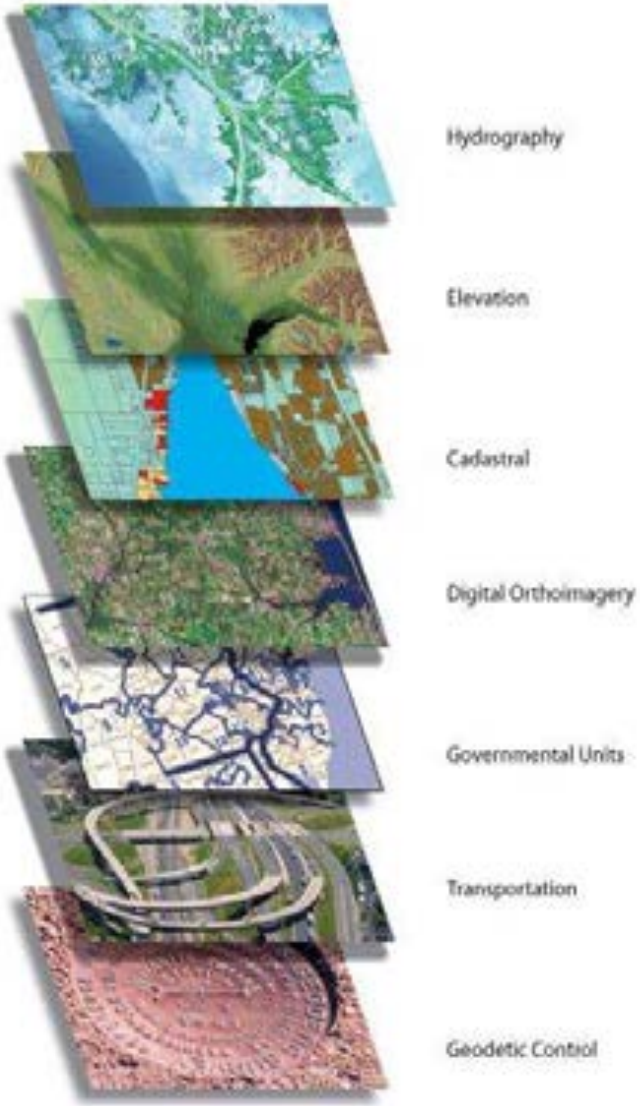
Geospatial Data Act 2018

National recognition and Directive for Federal Agencies



- Address
- Biodiversity and Ecosystems
- Cadastre
- Climate & Weather
- Cultural Resources
- Elevation
- Geodetic Control
- Geology
- Governmental Units
- Imagery
- International Boundaries
- Land Use – Land Cover
- Real Property
- Soils
- Transportation
- Utilities
- Water – Inland
- Water – Oceans & Coasts

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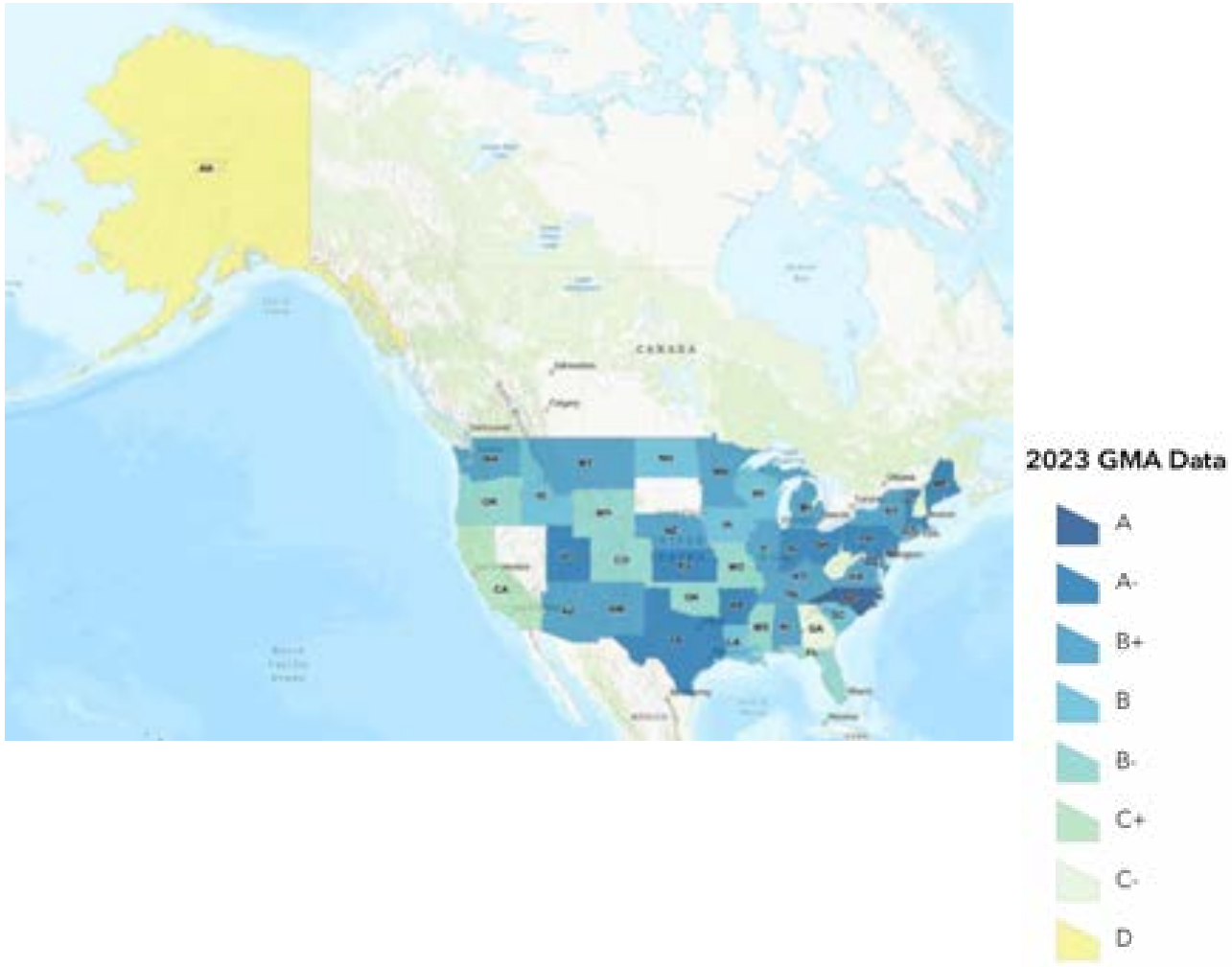
How does Alaska compare to other states?



GEOSPATIAL MATURITY ASSESSMENT 2023

Alaska Report Card

Overall Grade: D+

COORDINATION	GRADE: C

STATE-LED THEMES	GRADE
Address	F
Cadastre	N/A
Elevation	N/A
Orthoimagery Leaf-Off	N/A
Transportation	C
NG9-1-1	N/A

FEDERAL-LED THEMES	GRADE
Geodetic Control	B-
Government Units	F
Orthoimagery Leaf-On	N/A

METRICS:

A - Superior
B - Above average
C - Average
D - Below average
F - Failure
N/A - Not Applicable

The National States Geographic Information Council Geospatial Maturity Assessment provides NSGIC members and other partners with a summary of geospatial initiatives, capabilities, and issues within and across state governments. The NSGIC GMA now produce report cards for each state on central data themes and coordination topics. The assessment is performed every two years.

NSGIC

www.nsgic.org | info@nsgic.org | #nsgic

Why do we have so many data gaps?

BIG AND EXPENSIVE

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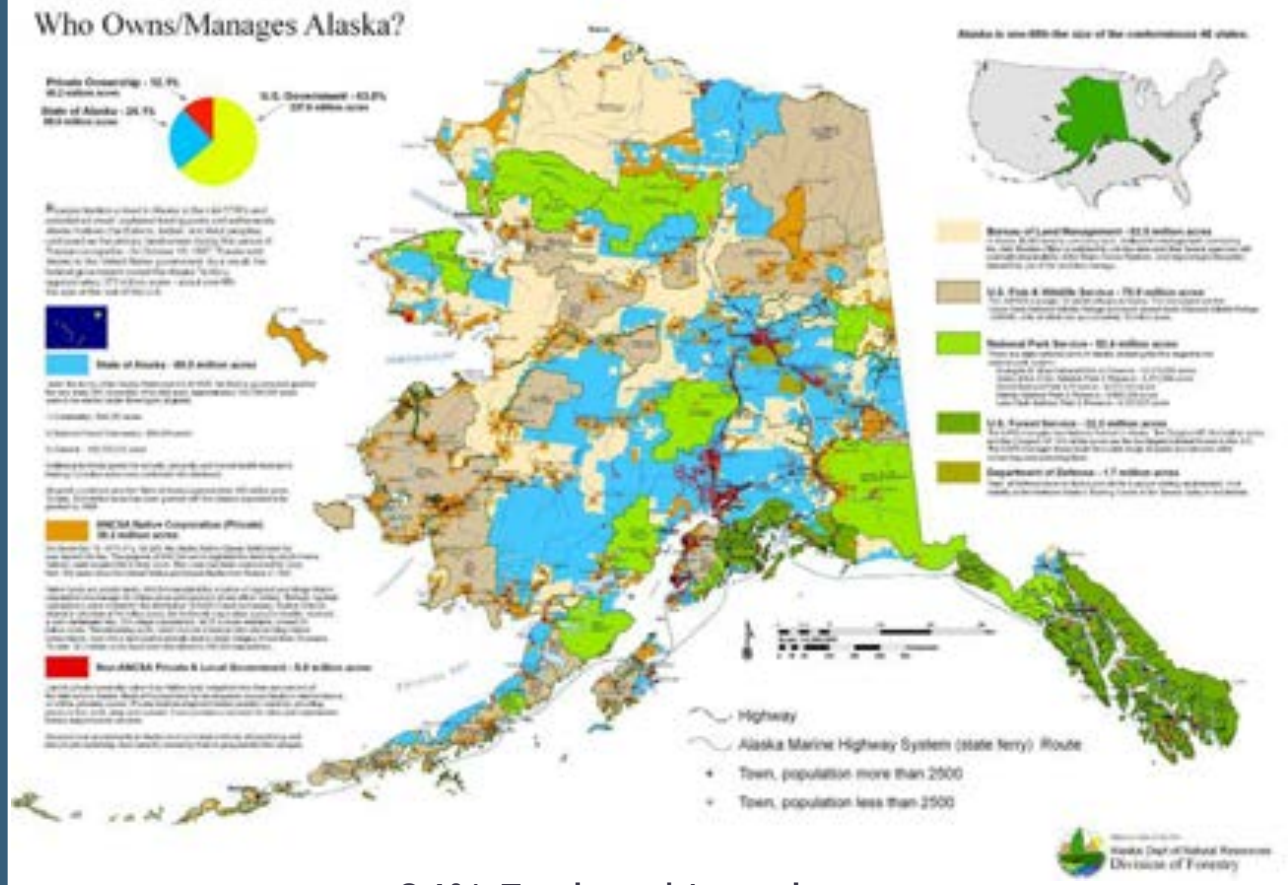
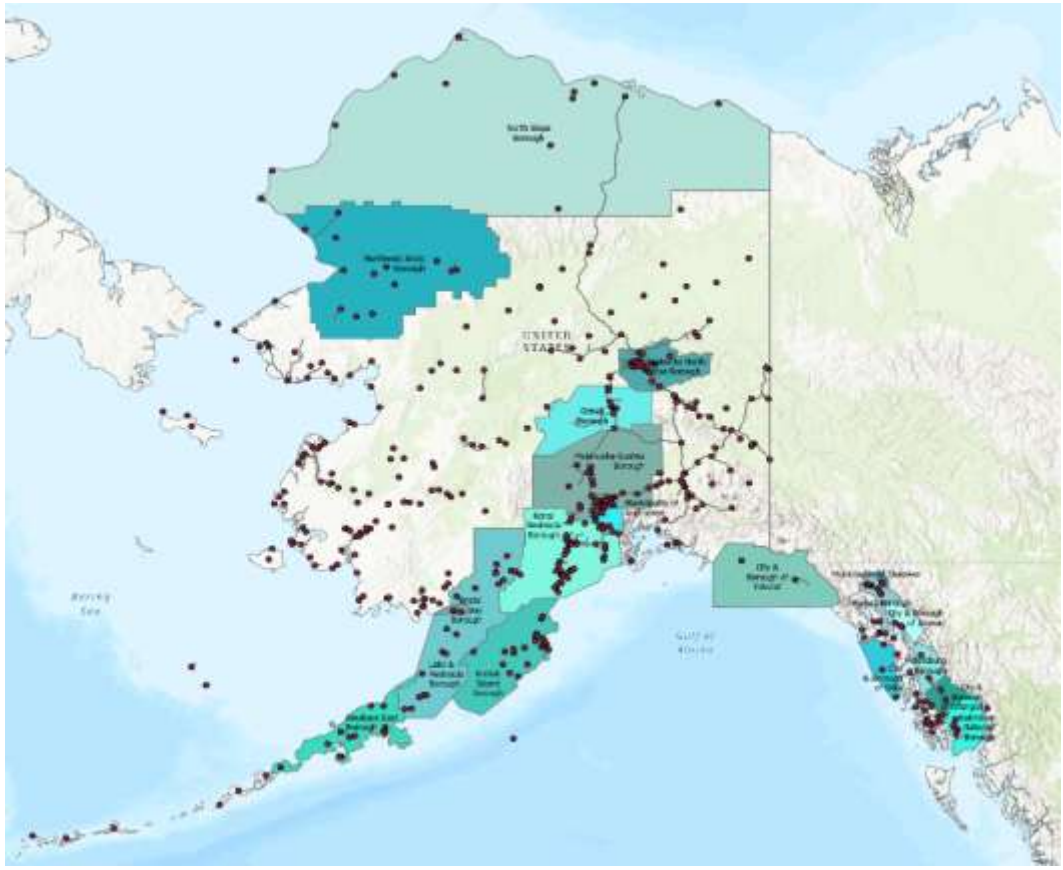


64% Federal Lands

Unincorporated Borough



229 Federally Recognized Tribes

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2011:

AK Congressional Delegation letter requesting increased coordination in mapping Alaska

"Mars is better mapped than Alaska"

Congress of the United States
Washington, DC 20510
March 8, 2011

The Honorable Jacob Lew
Director
The Office of Management and Budget
725 17th Street, NW
Washington, DC 20503

Dear Director Lew:

We are writing to you regarding a critical project for our home state that will require the coordination and cooperation of numerous federal agencies.

Alaska is the only state in the United States that has not been digitally mapped on a statewide basis. Most states have completed or are refreshing their existing data. Alaska is lagging behind other states that are in some cases 20 years ahead of Alaska.

Currently, the US Geological Survey (USGS) topographical maps of Alaska are over 40 years old, inaccuracies of up to a quarter mile or more are commonplace and these maps do not meet National Map Accuracy Standards. A reliable base map is critical to control incoming layers of Geographical Information Systems used across all disciplines both public and private. None of the modern disaster preparedness and emergency management systems being deployed elsewhere in the nation will work in Alaska until the need for an accurate base map is resolved. Geospatial information is spread across many levels of government, but lacks means of organization. As a result, the economic benefits, disaster recovery initiatives, and government efficiencies go largely unrealized.

To rectify this, The State of Alaska began a Statewide Digital Mapping Initiative (SDMI) several years ago and has now realized the first collection of elevation data (representing about 10% of the State) to this goal. Our immediate problem is the cost of the initiative and the scope and diversity of federal agencies that need and would benefit from this data collection. The State of Alaska has made a great initial effort to pull together approximately six million in funding to begin this initiative but the overall cost of the project will be closer to $48 million.

Current Alaska mapping priorities include, but are not limited to:

- Aviation safety
- Coastal resources and Alaska Coastal Management Program and spill response shore zone mapping
- Emergency response
- Fire hazard mapping for critical and high value protection areas
- Forest resource mapping in southeast, northern, and south central regions
- Gas line routing and permit support
- Global warming studies and response planning

Director Lew
March 8, 2011
Page 2

- Land cover and terrain for major state parks
- Land planning, corridor analysis and statewide land sales program
- Land use permit authorizations with commercial recreation permits
- Oil and gas infrastructure management and monitoring
- Coastal erosion monitoring

In addition to the USGS, the other federal agencies that are stakeholders in this initiative include the Bureau of Land Management, the Bureau of Indian Affairs, the Bureau of Reclamation, the National Park Service and other Department of Interior agencies; the U.S. Forest Service, Natural Resources and Conservation Service, other agencies within the Department of Agriculture; National Oceanic and Atmospheric Administration; the Federal Aviation Administration and other agencies within the Department of Transportation; NorthCom and other Department of Defense interests; various agencies within the Department of Homeland Security; and National Aeronautics and Space Administration, among others.

At the State level the agencies most directly in need of these maps include the Departments of Transportation, Public Safety, Fish and Game, Environmental Conservation, Commerce, Community, and Economic Development, Labor, Health and Social Services, and any other department using location based services to meet its mission. The State of Alaska has already provided six million for its share of this data collection and has pledged matching funds representing its 27% interest in State of Alaska lands under state control.

The only way we will coordinate the efforts of all federal agencies is to have the White House convene a meeting of all federal stakeholders and develop a strategy by which each agency contributes a portion of the overall cost. No single agency has sufficient funds to finance this program. Quite simply, we need the leadership and support of the White House to develop a plan that provides for the funding needed for this initiative and with a data set that meets the requirements of every federal agency.

We urge you to convene a meeting of representatives of every affected agency at the White House. We hope that you will be able to coordinate the efforts and assist in identifying discretionary funding within each agency that can help cover the cost of this critical initiative. We thank you for your attention to this issue and hope that we can work together for a successful outcome.

Sincerely,

Senator Lisa Murkowski Senator Mark Begich Congressman Don Young

cc: Cecilia Muñoz, Director, White House Office of Intergovernmental Affairs
Letitia Long, Director, National Geospatial-Intelligence Agency
The Honorable Marcia McNutt, Director, U.S. Geological Survey

Federal-State Coordination for Mapping Alaska

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ALASKA MAPPING
Executive Committee

- Not Public Committee
- Align state and federal priorities
- Cost-share towards common goal

AMEC Executive Membership

National Oceanic and Atmospheric Administration Co-Chair

- Bureau of Indian Affairs
- Bureau of Land Management
- Bureau of Ocean Energy Management
- Department of Defense
- Department of the Interior
- Environmental Protection Agency
- Federal Aviation Administration
- Federal Emergency Management Agency
- National Geospatial Intelligence Agency

U.S. Geological Survey Co-Chair

- National Park Service
- National Reconnaissance Office
- Natural Resources Conservation Service
- Office of Management and Budget
- State of Alaska
- U.S. Army Corps of Engineers
- U.S. Fish and Wildlife Service
- U.S. Forest Service
- U.S. Senate

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Current Statewide Mapping Priorities

ALASKA MAPPING
Executive Committee

- Elevation (Lidar)
- Imagery
- Wetlands
- Vegetation
- Hydrography (rivers/lakes)
- Shoreline
- Coastal elevation (on-land and nearshore depths)

Elevation: IFSAR to Lidar

First statewide elevation product complete in 2020

10-year / $68M project
Cost-shared between federal agencies and SOA

- IFSAR – 5m
- Lidar – 0.5m

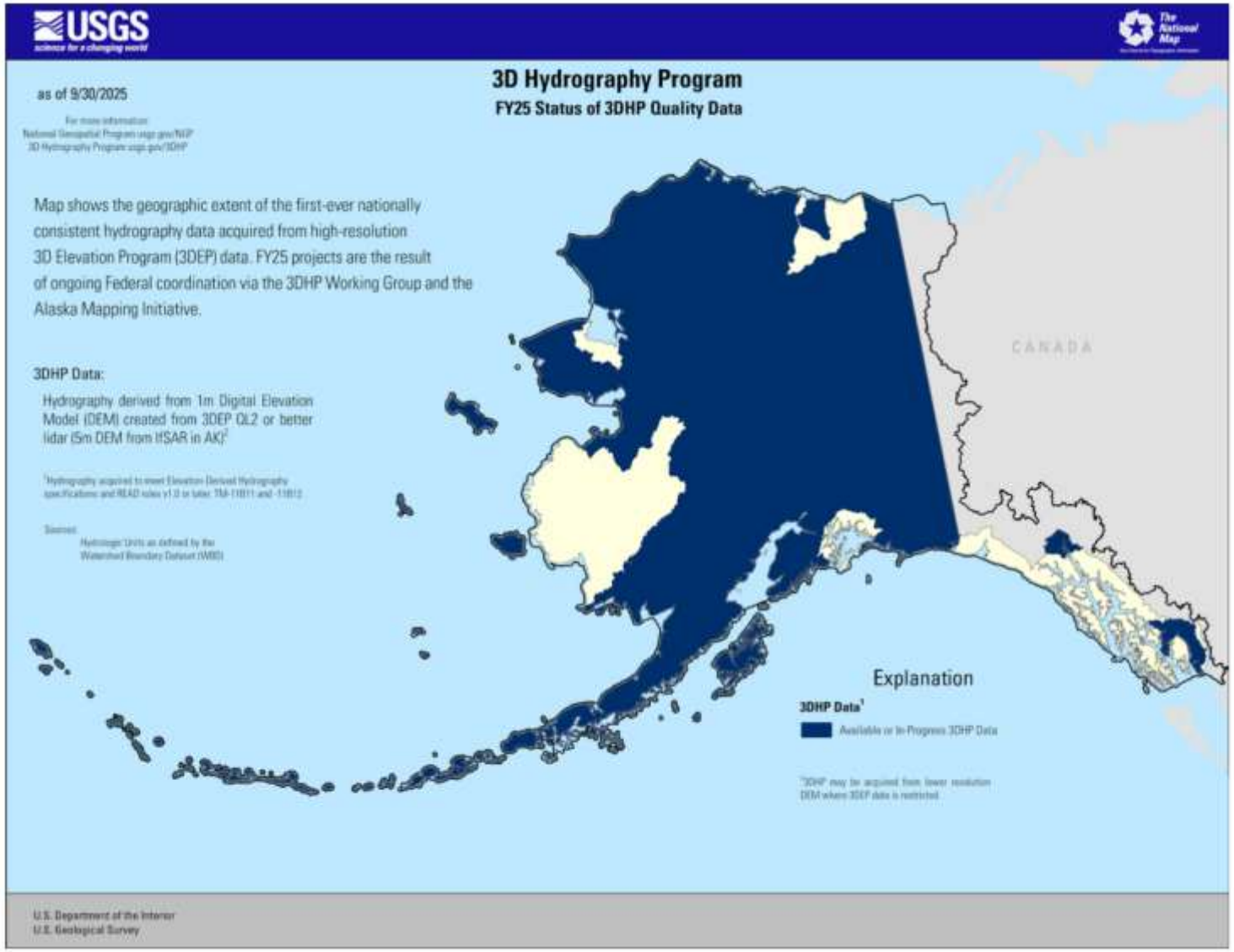
The 3D National Topography Model Call for Action—Part 2: The Next Generation 3D Elevation Program

Circular 1553
Version 1.1, July 2025

USGS
science for a changing world

USGS Alaska 3D Hydrography Program (3DHP)

- Elevation-derived
- In Alaska the new product come from IfSAR elevation data



USGS
science for a changing world

USGS Alaska 3D Hydrography Program

Data Access

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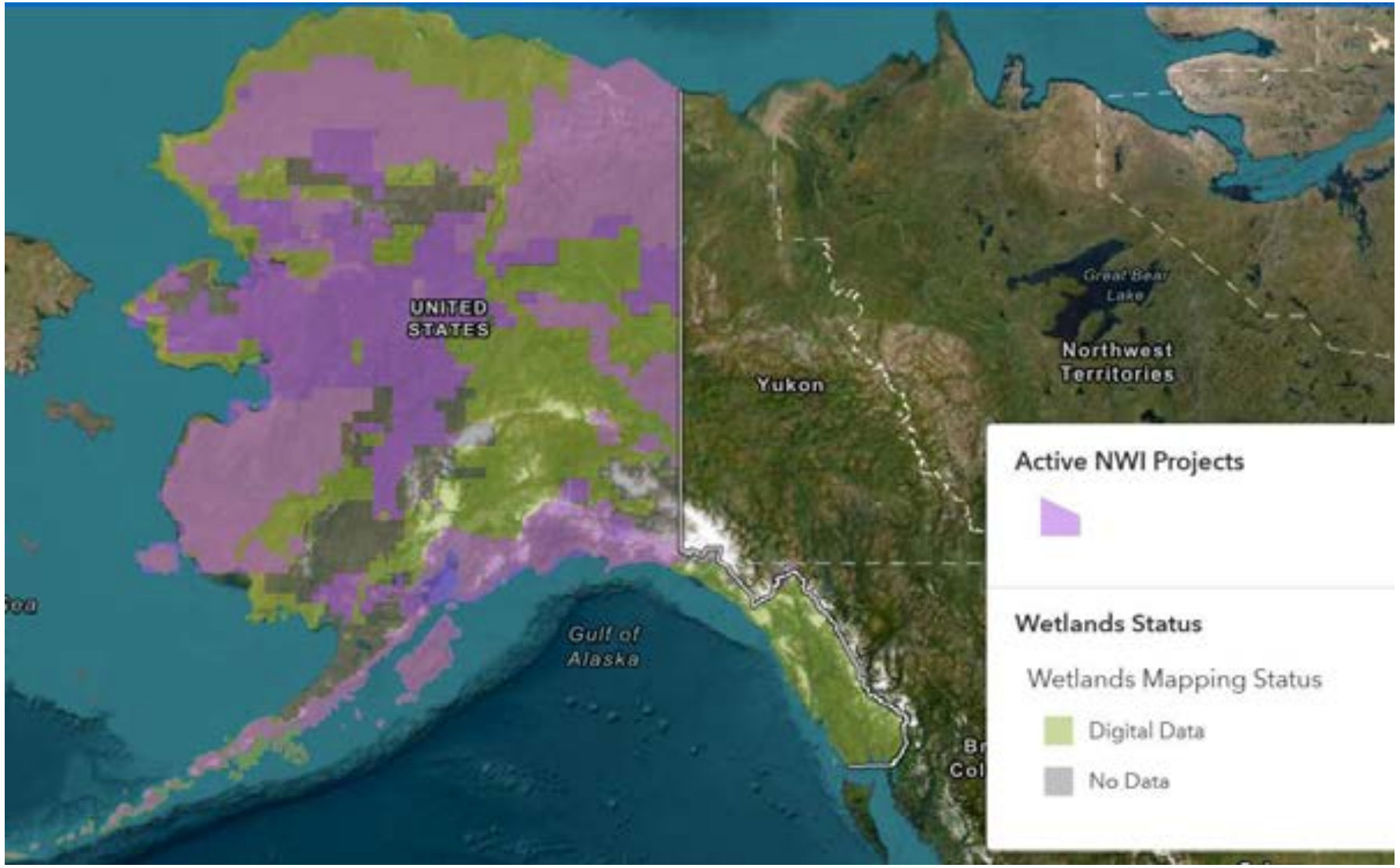
USFW National Wetland Inventory Program



100% FUNDED

- 65% complete
- 35% in progress

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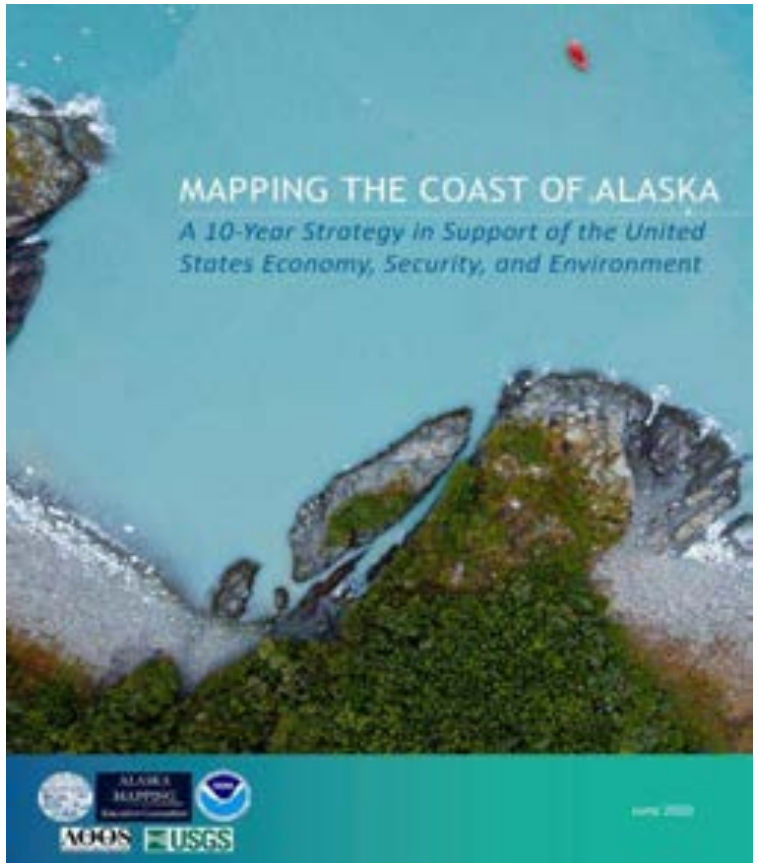
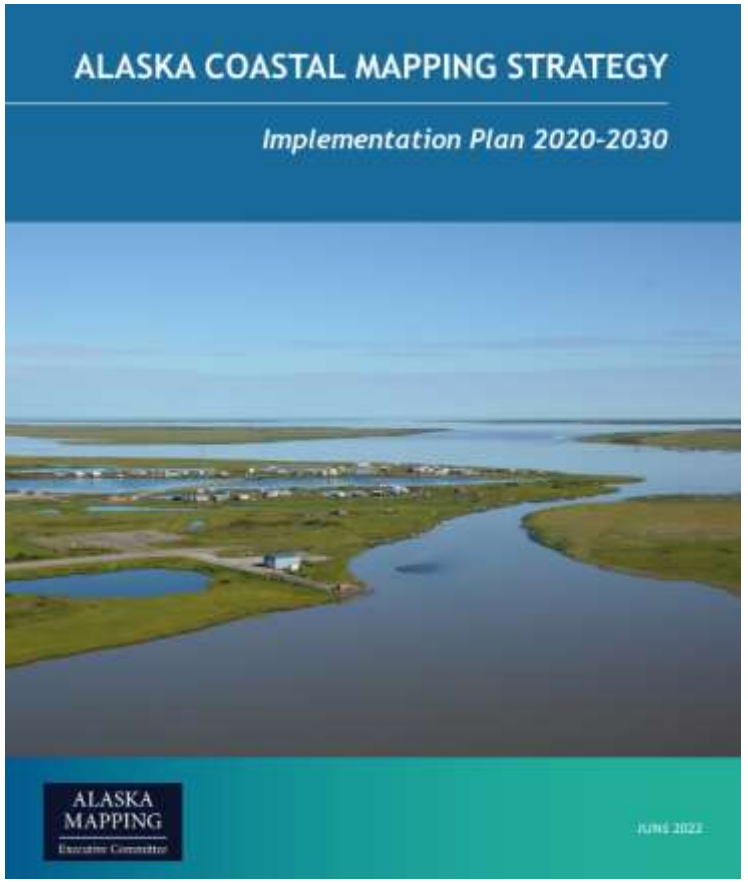
Alaska's Coastal Mapping Strategy



2020 Alaska Coastal Mapping Strategy

ALASKA MAPPING
Executive Committee



2022 Alaska Coastal Mapping Strategy - Implementation Plan

Envisions Seamless Coastal Elevation

Terrestrial elevation and nearshore water depths

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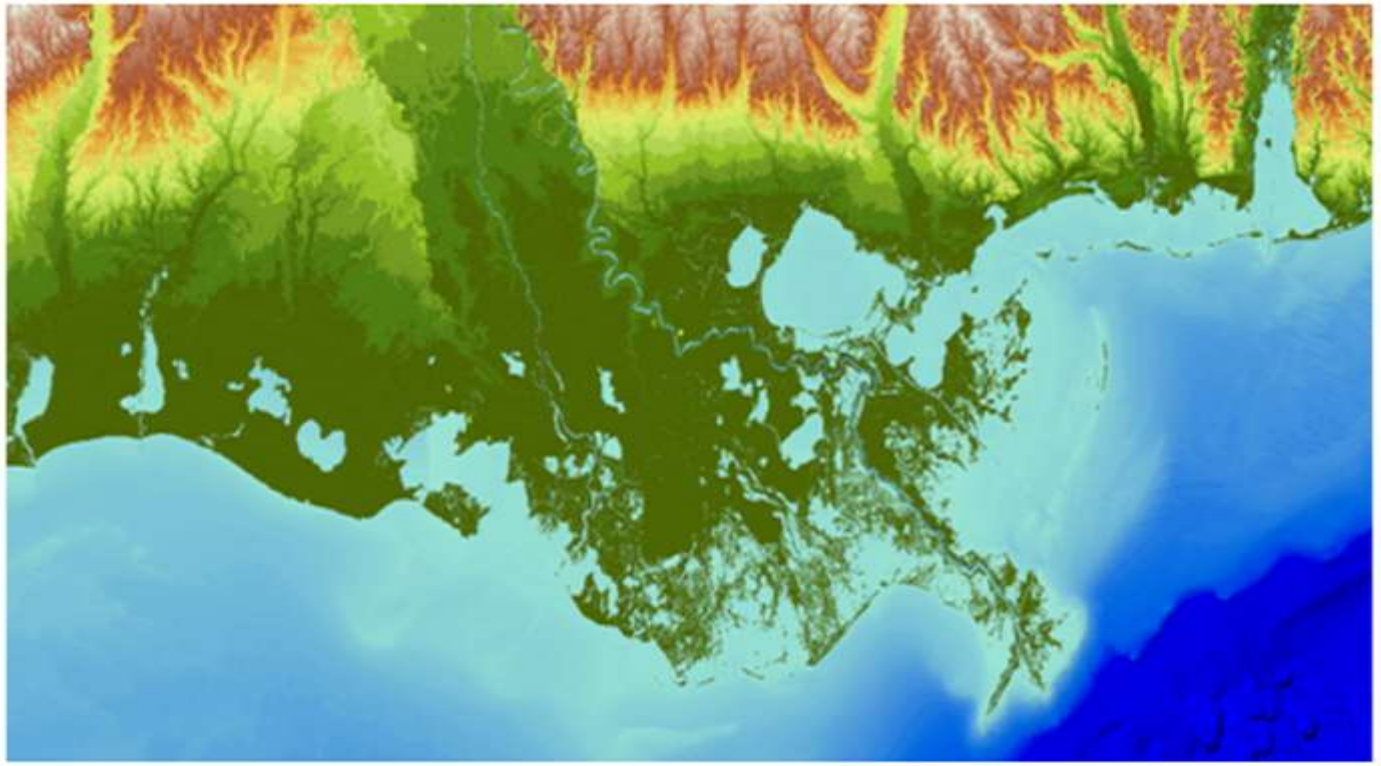
Leveraging different technologies

- Imagery
- Lidar (22% of coastline complete)
- Topobathy Lidar
- Satellite derived bathymetry
- Multi-beam Sonar



ALASKA MAPPING Executive Committee

Statewide Satellite Imagery

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SPOT 5 – 2.5m (2009)

ALASKA MAPPING Executive Committee

Maxar – 50cm (2020)

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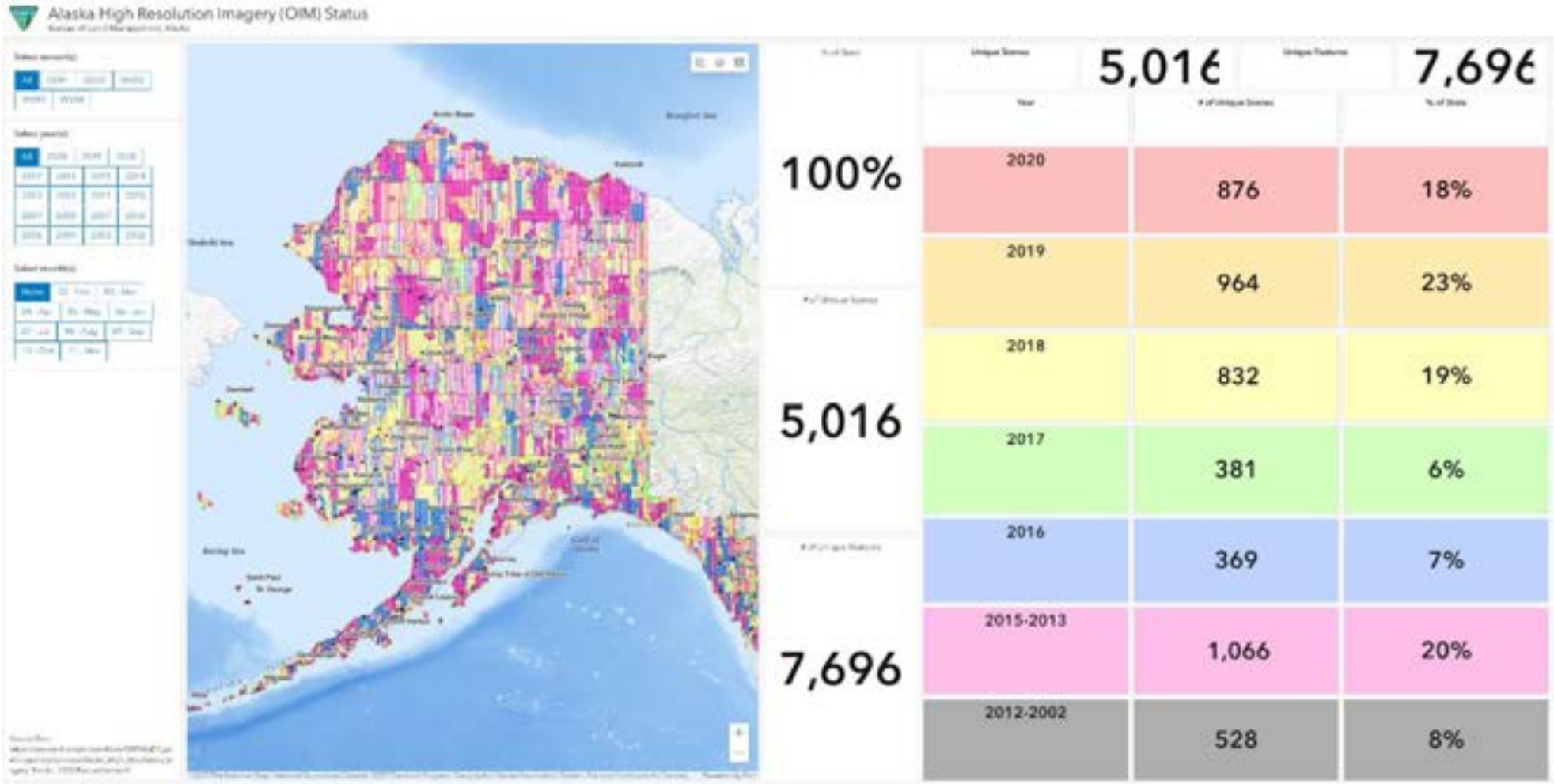
Statewide Imagery Mosaics

20% Refresh each year

August 2025
13,552 unique users
14M Data requests



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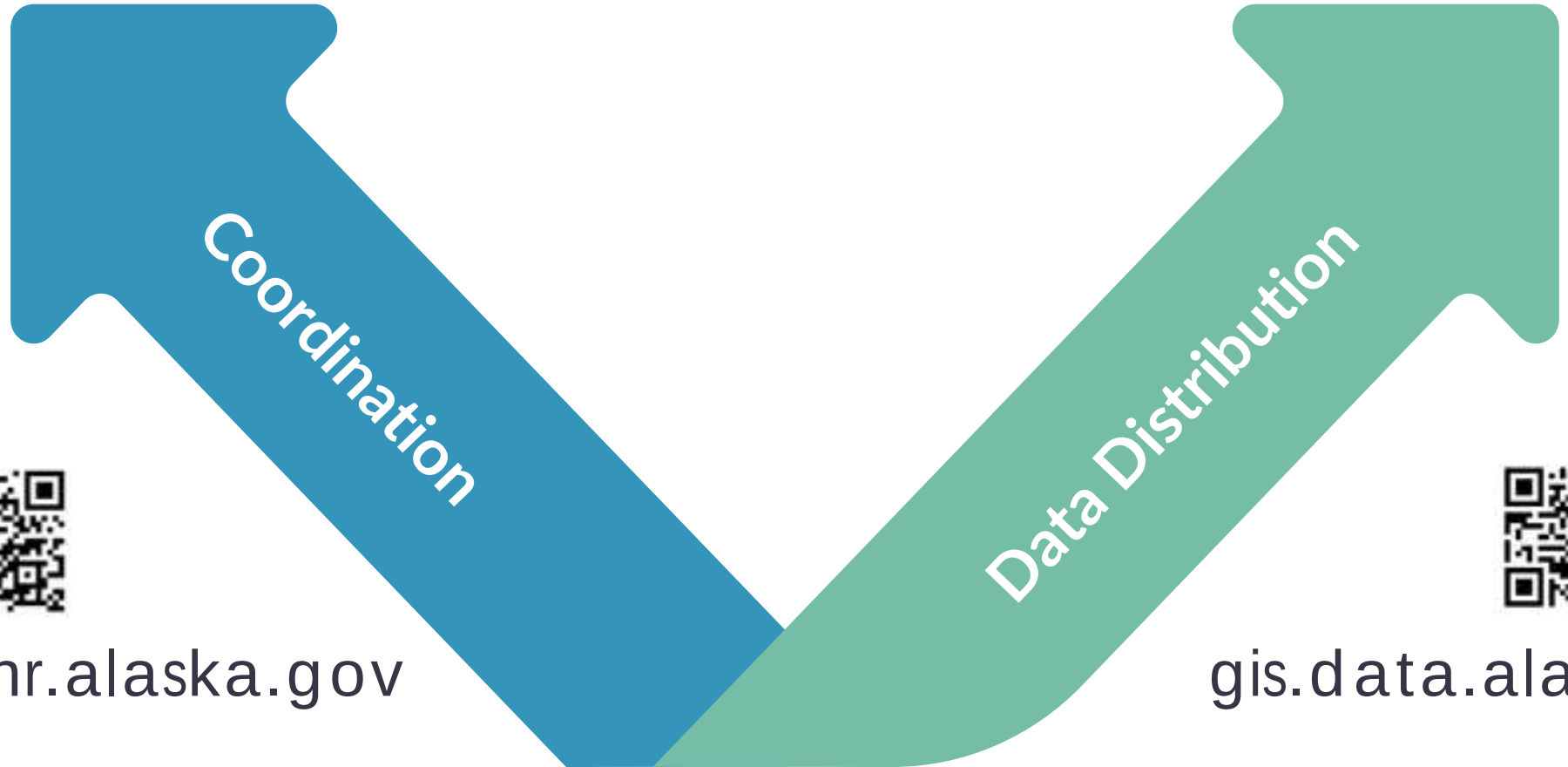
Alaska Geospatial Council

MAPAK

State of Alaska Geoportal

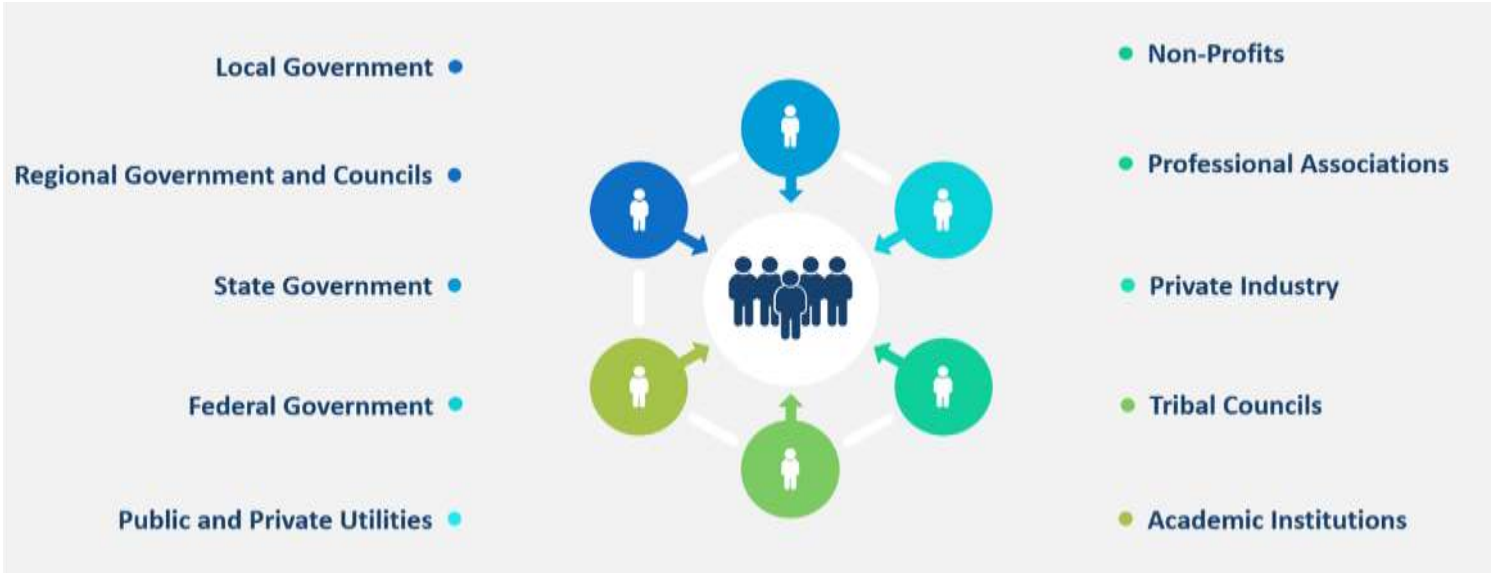


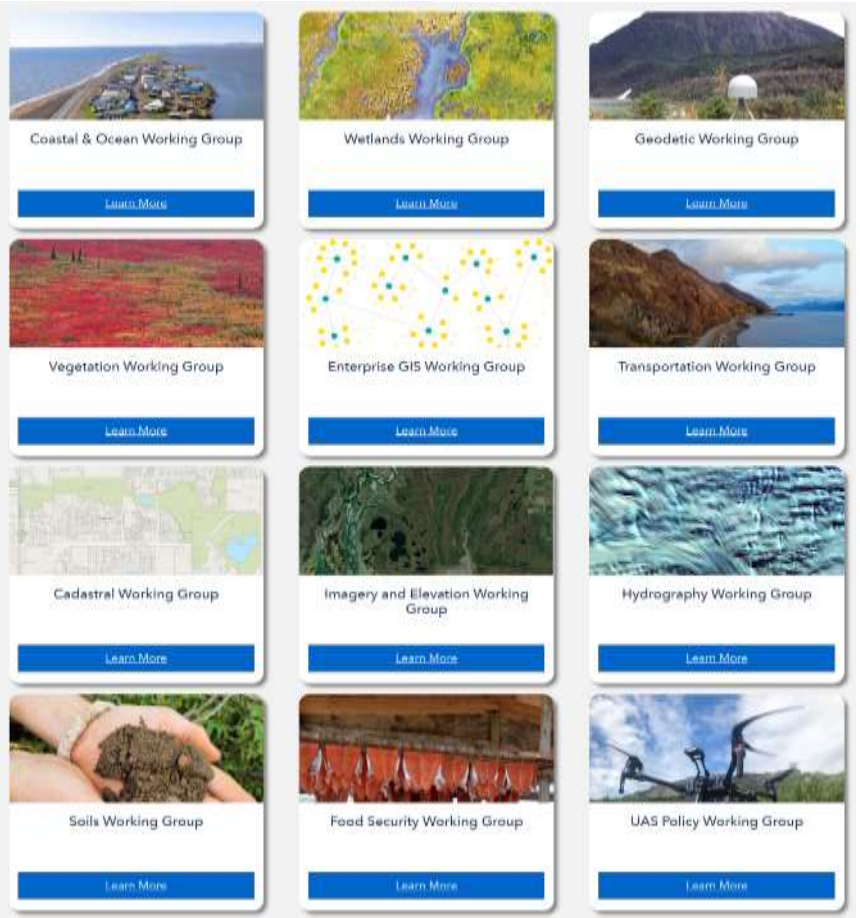
agc.dnr.alaska.gov

gis.data.alaska.gov

Coordination – Prioritization – End User Needs

Administered by Alaska Geospatial Office





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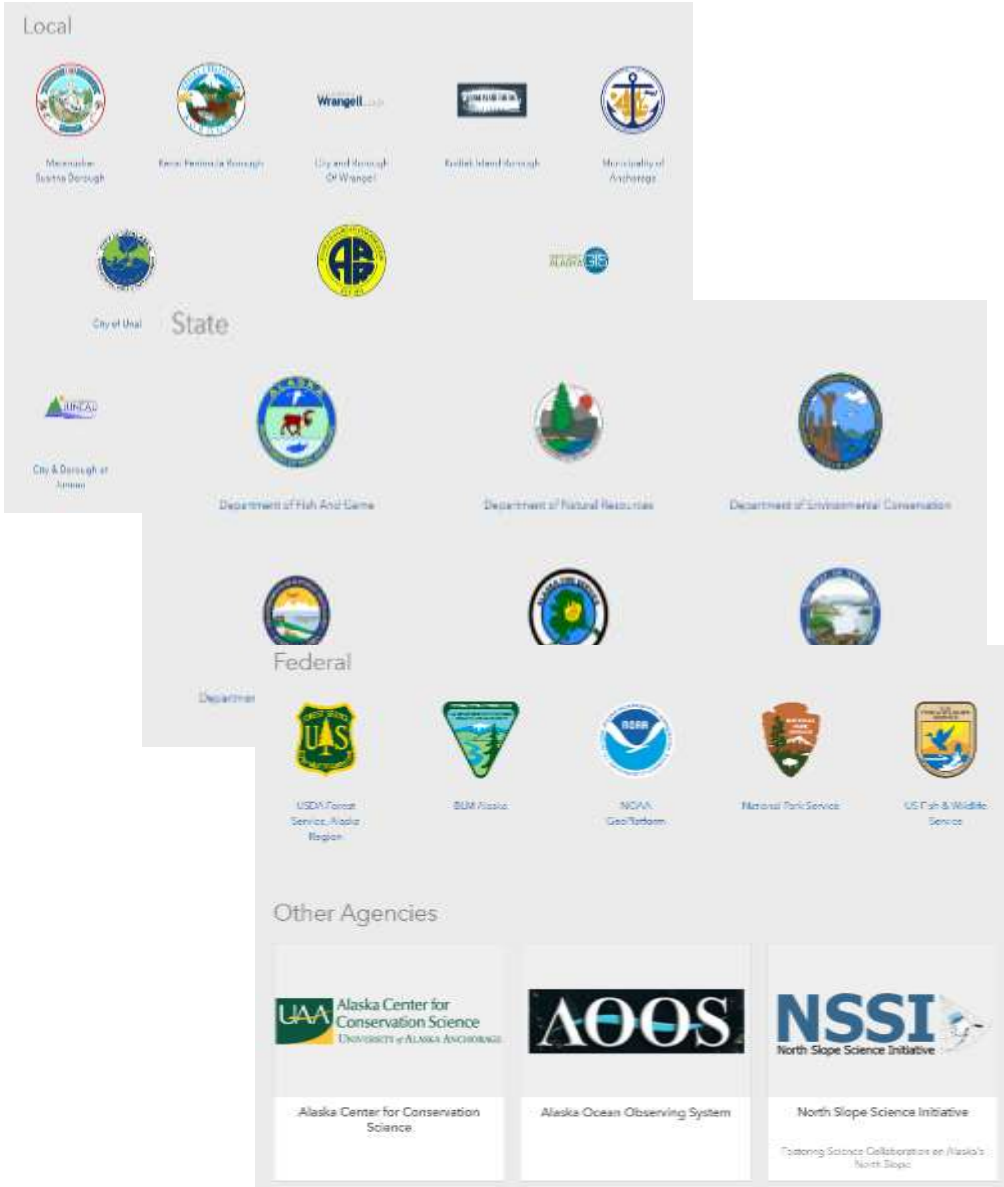
Collaborate – Share – Innovate

Centralized Data Discovery and Accessibility

Administered by Alaska Geospatial Office



gis.data.alaska.gov

Breakdown Organizational Silos

Centralized Discovery Platform

Connecting Data Hubs

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Data Steward Partnerships

Definition

The publishing organization has compiled the data from quality checked, internally produced data and intends it to be used as the most accurate and reliable source of data.

Or

The publishing organization has compiled data from a partner who has given permission to publish and update data on their behalf and who intends it to be used as the most accurate and reliable source of data.

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Spotlight: UAA Alaska Center for Conservation Science

Dataset

AKEPIC_Data

Alaska Center for Conservation Science

The Alaska Exotic Plants Information Clearinghouse (AKEPIC) is a database and mapping application that provide geospatial information for non-native plant species in Alaska and neighboring Canadian Territories....

Type: **Feature Service** Date updated: **11/18/2025**
Tags: **Alaska Exotic Plants Information Clearinghouse (AKEP...** Date created: **8/10/2021**

Dataset

AKEPIC_Data_Positive_Records

Alaska Center for Conservation Science

The Alaska Exotic Plants Information Clearinghouse (AKEPIC) is a database and mapping application that provide geospatial information for non-native plant species in Alaska and neighboring Canadian Territories....

Type: **Feature Service** Date updated: **11/18/2025**
Tags: **Alaska Exotic Plants Information Clearinghouse (AKEP...** Date created: **11/9/2021**

Application

Mining Footprint Web Map App - ACCS Data Catalog

Alaska Center for Conservation Science

Map depicts historical and current ground disturbance resulting from surface mining across Alaska and Northwest Canada. Polygons were initially derived from point locations of historic sites (ARDF - Alaska Resour...

Type: **Web Mapping Application** Date updated: **11/18/2025**
Tags: **footprint, disturbance, anthropogenic, mining, streams...** Date created: **8/21/2024**

Dataset

AKFlow_Gages

Alaska Center for Conservation Science

A working inventory of current and historic stream and river gages across Alaska combining sites from multiple federal and state agencies

Type: **Feature Service** Date updated: **11/18/2025**
Tags: **hydrology, Alaska** Date created: **4/1/2024**

Application

AK Flow Sites Webmap App

Alaska Center for Conservation Science

A working inventory of stream gage sites across Alaska compiled from multiple state and federal agencies.

Type: **Web Mapping Application** Date updated: **11/18/2025**
Tags: **hydrology, discharge, gage, gauge, stream** Date created: **10/6/2023**

Best Practices for
Authoritative Data Providers
Maximize the deliciousness of your shared geospatial content
18 September 2025

1. Maintain reliable, persistent data layers and web services

Shared data layers need to be **reliable**. People and organizations rely on the authoritative data you share in their own maps and apps.

If you change the ItemID of a shared web data layer, the maps and apps that rely on your data layer no longer have access, possibly rendering them useless.

> ***GOOD PRACTICE:*** *Maintain* ***persistent data layers*** *with unchanged ItemIDs / service URLs.*

2. Publish individual layers

While web services can contain multiple sublayers, publishing **individual web layers** typically provides greater control when sharing an item and its metadata.

Sharing individual web layers will also be faster than having multiple sublayers in one service.

> ***GOOD PRACTICE:*** *Publish* ***individual web layers*** *(these may or may not have related tables).*

3. Item title uses a naming convention

When you share content in ArcGIS Online and Hub, your data live among hundreds of thousands of others in a global data ecosystem.

A simple **naming convention** for your Item titles distinguishes your content from others and helps users quickly find and discover what they need.

> ***GOOD PRACTICE:*** *Titles should be succinct yet descriptive. Follow the pattern: "**LayerTopic of Jurisdiction**" and include time period when relevant.*

4. Complete Item information

ArcGIS Enterprise and ArcGIS Online Item pages present essential **Item information**.

*These **essential metadata elements** are also available in the Metadata Editor.* They represent the core information needed to make your data **FAIR** (**F**indable, **A**ccessible, **I**nteroperable, and **R**eusable).

> ***GOOD PRACTICE:*** *Complete **essential metadata elements** in the Item information and/or Metadata Editor.*

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Got Metadata?

Summary

The **Summary** should be succinct yet descriptive. The Summary appears in different places when your content is shared, for example, with Items displayed in a gallery or as information on your Hub site.

Description

The **Description** (also known as the *Abstract*) tells visitors **what** your content is about.

For example, it may convey **what** the data represent, **where** the data is located, **how** accurate it is, **when** it was collected, and **who** collected it.

Field attribute alias and description

Authoritative data represent the **highest quality ingredients** available.

Transform your layers' value with user-friendly attribute **field aliases and descriptions**.

Tags

Tags improve the search experience for people visiting your site.

> ***GOOD PRACTICE:*** *Be specific with your tags.*

Terms of use

Terms of use are how you want people to use this data, including general use limitations, restrictions, and constraints.

License

Include a license associated with your open data (e.g., Creative Commons code "CC0").

What's Next for the State Geoportal?

GOAL: Curate best available data for decision-making

- Remove duplicate data sources
- Grow our partnerships with data stewards
- Implement standard workflows for connecting data hubs
- Alaska specific Best Practices for Data Governance
- Data quality checks with reports back to stewards

RESULT: Build your own basemap from Authoritative Data

AK SkyHub – Remote Sensing Portal

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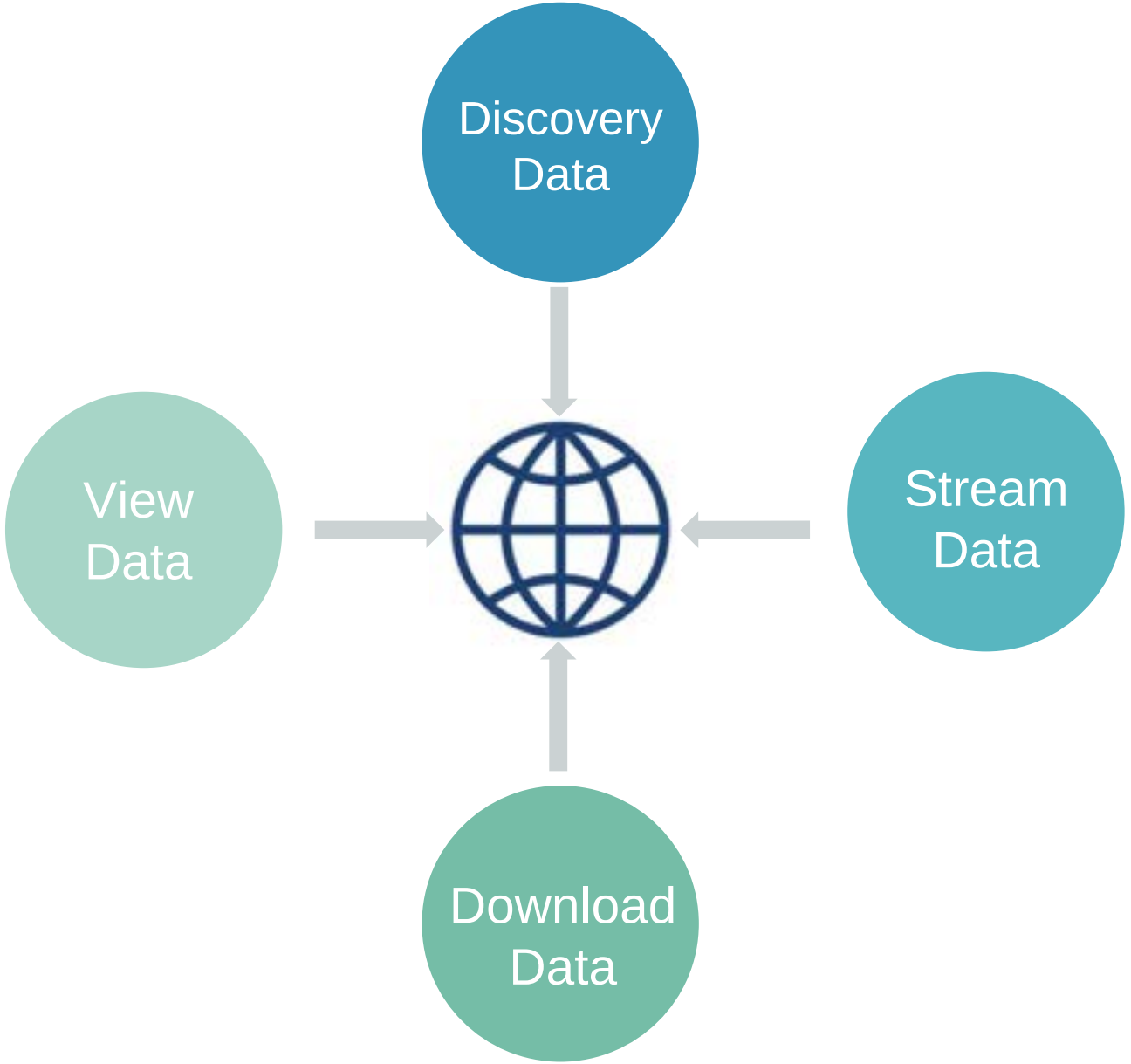
Single platform for discovery of remotely sensed data

- Imagery
- Elevation (lidar)
- Topobathy (water depths)



Enabling GeoAI

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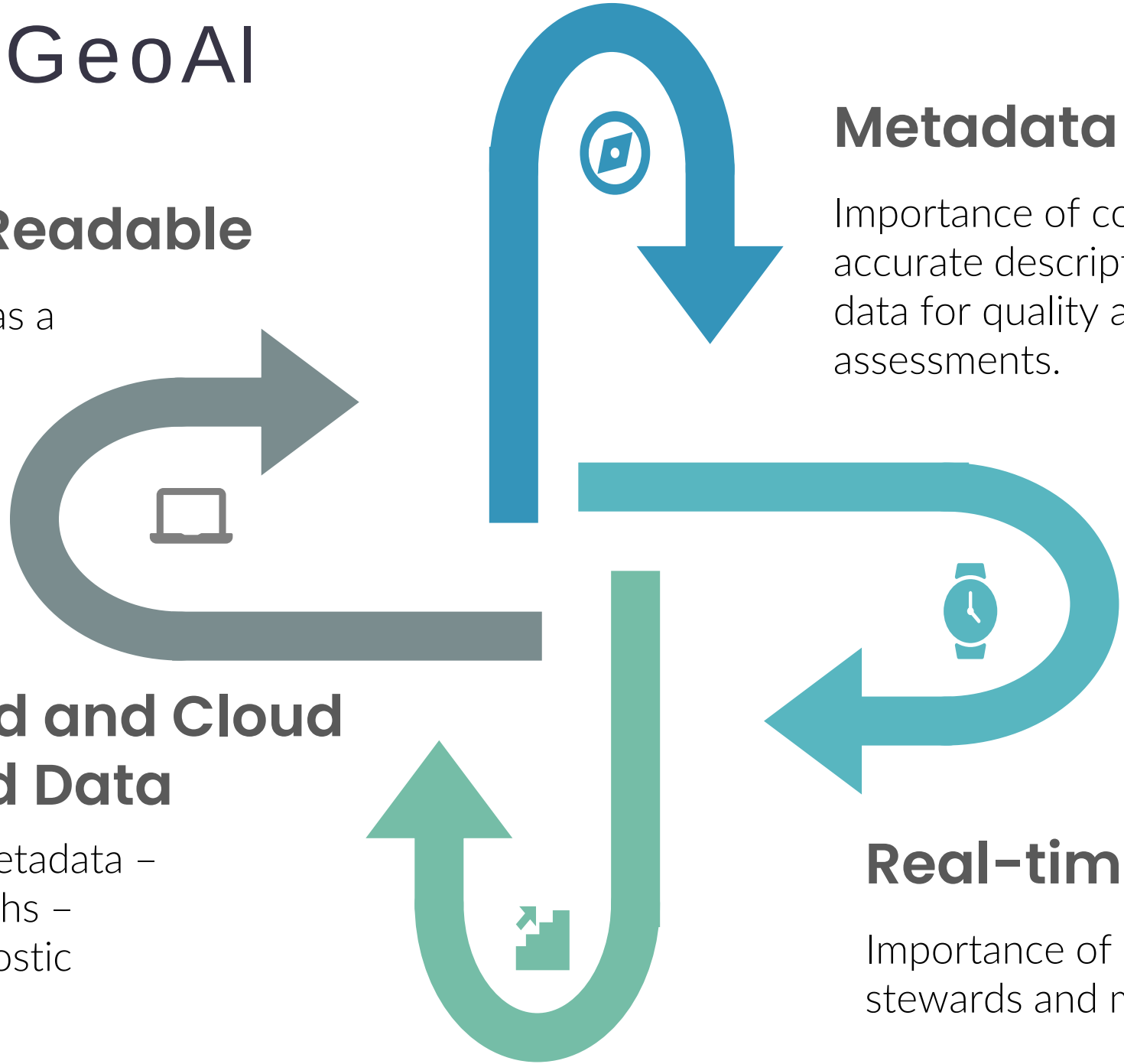
Machine Readable

Publishing data as a service.

Metadata

Importance of complete and accurate description of the data for quality and fit for use assessments.



Structured and Cloud Optimized Data

Standardized metadata – knowledge graphs – technology agnostic formats.

Real-time Access

Importance of data stewards and managers.

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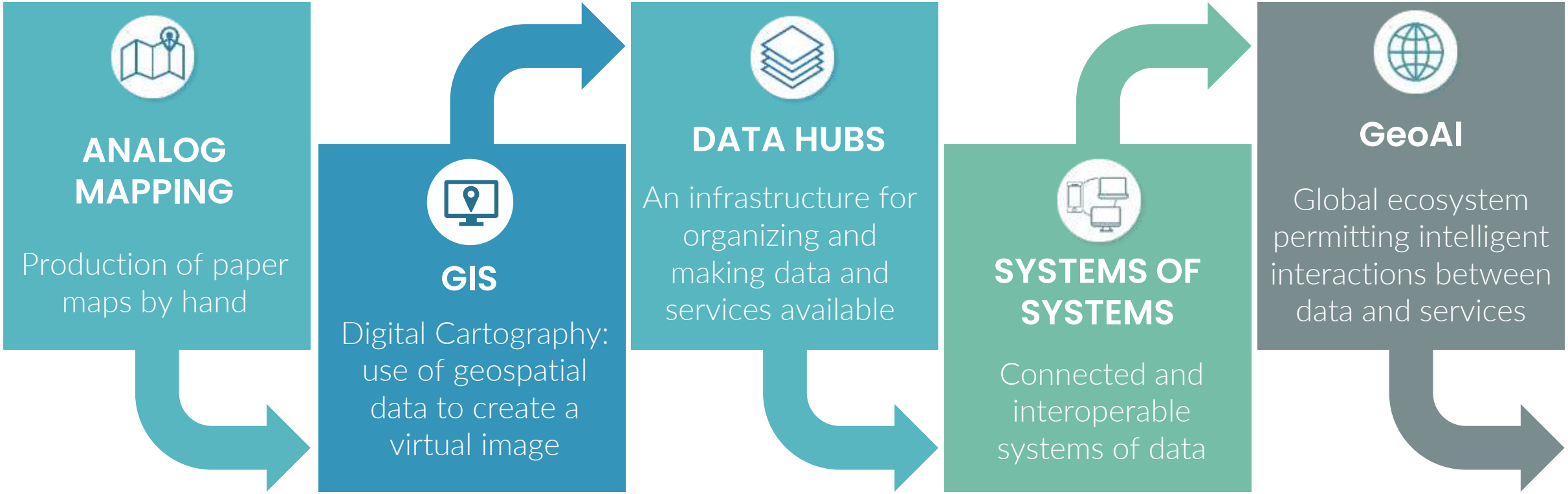
GEOSPATIAL CONTINUUM: WHERE ARE YOU?



Considerations for Bridging Science and Policy

- Treat data as a long-term management asset; Not a project output
- Define archive and distribution pathways before the project begins
- Implement metadata documentation
- Ensure discoverability, Not just storage
- Plan for Interoperability across agencies and organizations
- Incorporate stewardship into grant budgets and work plans
- Assign a Long-term "Data Steward" - "Owner" – "Proxy"

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Collaborate – Share – Innovate

How to get Involved and grow your Alaska Network

2026 September 21-22nd - Alyeska

Collaborate – Share – Innovate

Credit: Daniel Coe

Contact:
leslie.jones2@alaska.gov

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ALASKA GEOSPATIAL OFFICE