Building Capacity for a National Secure Data Service

Recommendations for Strengthening Implementation, Adoption, and Trusted Data Use

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Glossary

Term	Definition
Administrative burden	The time, effort, paperwork, approvals, agreements, account setup, compliance steps, or other process requirements needed to access, share, link, or use data.
American Indian	A federal classification referring to individuals who are members of federally recognized Tribal Nations located within the contiguous United States. The term does not encompass all Indigenous Peoples and does not replace the specific names, identities, and citizenship criteria of Tribal Nations.
Alaska Native	A federal classification referring to Indigenous Peoples of Alaska who are members of federally recognized Alaska Native Tribes and/or meet statutory definitions of Alaska Native eligibility under applicable federal programs. Alaska Native Peoples maintain distinct Tribal, cultural, linguistic, and political identities that extend beyond this federal classification.
Core functions	The set of services, supports, and activities that NSDS can provide, including what it can address directly, what requires coordination with another entity, and what falls outside its scope.
Data concierge	A service or support function that helps users clarify their data questions, identify relevant data sources, understand access pathways, and connect with appropriate resources, documentation, or subject matter experts.
Data ecosystem	The people, organizations, systems, policies, data sources, infrastructure, and governance processes involved in collecting, managing, sharing, linking, protecting, analyzing, and using data.
Data governance	The subset of governance focused specifically on data stewardship, access, quality, documentation, privacy, security, ownership, sharing, linkage, and appropriate use.
Data infrastructure	The technical and organizational foundations needed to collect, store, manage, protect, access, link, analyze, and share data. This can include systems, platforms, networks, metadata, standards, secure environments, staffing, and governance processes.
Data linkage	The process of connecting records or information from two or more data sources to support analysis, service delivery, evaluation, research, or decision making.
Evidence-building capacity	The ability of governments and organizations to collect, access, manage, analyze, interpret, and use data and other information to understand needs, evaluate programs, improve services, allocate resources, and inform decisions.
Federal Indian trust responsibility	The legal and fiduciary obligation of the federal government, arising from treaties, statutes, executive orders, judicial decisions, and the government-to-government relationship, to protect Tribal treaty rights, lands, assets, and natural and cultural resources; support Tribal self-determination and self-governance; and fulfill legally recognized responsibilities to Tribal Nations and their citizens, including responsibilities related to health, education, public safety, and welfare.
Indigenous	A term commonly used to describe peoples with longstanding ancestral and cultural relationships to their lands, waters, communities, and governance systems that predate colonization. The term is widely used in Indigenous scholarship, international law, and policy contexts but is not a defined legal category under U.S. federal Indian law.
Indigenous Data Governance	The policies, processes, institutions, protocols, and decision-making structures through which Indigenous Data Sovereignty is exercised across the data life cycle.

Term	Definition
Indigenous Data Sovereignty	The inherent right and authority of Indigenous Peoples and Tribal Nations to govern the collection, ownership, access, use, stewardship, and application of data related to their peoples and communities, lands, resources, and knowledge, in accordance with their own laws, values, protocols, and priorities.
Interoperability	The ability of systems, organizations, or datasets to exchange, interpret, and use information in a consistent and reliable way.
Metadata	Information that describes a dataset or data element, such as definitions, source, collection method, update schedule, quality, limitations, access restrictions, and appropriate uses.
Role-based navigation	A design approach that helps users find relevant information, tools, and supports based on their role, task, capacity, or responsibilities rather than requiring all users to follow the same generic entry point.
Secure access	A controlled way for authorized users to access data while protecting privacy, confidentiality, security, and stewardship requirements.
Secure compute environment	A protected data access and analytical environment that allows authorized users to access, link, or analyze data while limiting disclosure, unauthorized access, or misuse.
Stewardship	The responsible management and protection of data throughout its lifecycle, including decisions about access, use, sharing, documentation, quality, privacy, security, and long-term maintenance.
Technical assistance	Targeted support that helps users or organizations implement, operate, or improve data-related systems, processes, governance practices, tools, or analytic activities. For the NSDS, technical assistance includes support for users and visitors to use NSDS tools and services as well as providing them with assistance in navigating the data ecosystem.
Territories (territorial governments, U.S. territories)	Jurisdictions under the sovereignty and territorial authority of the United States that are not part of any state. U.S. territories are governed pursuant to the U.S. Constitution, federal statutes, and their respective organic acts or governing documents established by Congress under the Territorial Clause (U.S. Const. art. IV, § 3, cl. 2). Territorial governments are the political institutions established to administer local governance within these jurisdictions, with powers and limitations defined by federal law. Inhabited territories include: American Samoa, Guam, Commonwealth of the Northern Mariana Islands (CNMI), Puerto Rico, and the U.S. Virgin Islands.
Tribal sovereignty	The inherent and preexisting authority of Tribal Nations to govern themselves, their citizens, lands, resources, and internal affairs according to their own laws, customs, and institutions. Tribal sovereignty predates the formation of the United States and does not derive from federal law.
Urban confer	A formal engagement process through which federal agencies seek input from Urban Indian Organizations on policies, programs, funding decisions, and other actions that may affect the delivery of services to AI/AN people living in urban communities. It complements, but does not replace, government-to-government Tribal consultation.
User journey	A practical, role-based depiction of how a user would interact with NSDS from an initial question or task through discovery, support, access or stewardship decisions, and next steps.

Acronyms

Acronym	Definition
AI	Artificial Intelligence
AI/AN	American Indian and Alaska Native
CHIPS	Creating Helpful Incentives to Produce Semiconductors
D4I	Data for Indigenous Implementations Interventions and Innovation
DSA	Data sharing agreement
DUA	Data use agreement
EHR	Electronic health record
IDG	Indigenous Data Governance
IDS	Indigenous Data Sovereignty
IRB	Institutional Review Board
NSDS	National Secure Data Service
NEPA	National Environmental Policy Act
NSDS-D	National Secure Data Service demonstration
MOU	Memorandum of understanding
NCSES	National Center for Science and Engineering Statistics
NSF	U.S. National Science Foundation
OCAP	Ownership, Control, Access, and Possession
TDR	Tribal data repository
TRUST	Transparency, Responsibility, User Focus, Sustainability, Technology

Executive Summary

A National Secure Data Service (NSDS) is intended as a shared federal service to improve data access, reduce burden on agencies and data users, support responsible data linkage and analysis, support privacy protections, and strengthen evidence building. The National Center for Science and Engineering Statistics is leading the NSDS Demonstration (NSDS-D), which is a pilot of services, technologies, and techniques to inform the build-out of an NSDS. Planned components of the NSDS include discovery and navigation tools, support from human subject matter experts, capacity-building resources, and a secure compute infrastructure. As envisioned, an NSDS would not serve as a centralized data warehouse. Instead, agencies would retain control over their data while using the NSDS to make data more discoverable, support secure access and linkage, and help users navigate a complex government data ecosystem.

This report provides recommendations for how the NSDS can build the capacity, supports, and implementation conditions that federal, state, local, territorial, and Tribal government users will need to participate in a service and use it effectively. The recommendations build on findings from Mathematica's companion needs and gaps report and related study activities, including structured conversations, webinars, input from and meetings with expert panels, and a landscape review. Rather than restating all needs and gaps identified through the study, this report focuses on how the NSDS can make its services usable in practice, especially for governments and users that may face barriers to participation related to staff, infrastructure, governance, legal, documentation, trust, or technical matters.

The recommendations reflect one overarching finding: NSDS is already focused on many of the right service components, but its success will depend on whether users have access to the necessary services and supports to effectively engage with it and achieve its aims. Stakeholders emphasized that users need more than a technical platform. They need clear user journeys, practical governance and legal supports, understandable documentation, appropriate human assistance, usable standards and metadata, capacity-building resources, and evidence that the NSDS reduces burden and creates value. These supports are central to whether the NSDS can become a service that users can trust, depend on, and incorporate into real evidence-building workflows.

The report presents 11 recommendations organized into three groups: seven cross-cutting recommendations, one recommendation specific to U.S. territories, and three Tribal-specific recommendations (Exhibit ES.1).

As the NSDS-D continues, these recommendations can help guide decisions about the supports, partnerships, governance structures, and measures of progress needed to move from demonstration toward a usable and trusted service. The report concludes with an implementation roadmap that sequences recommended actions over the short, medium, and long term and reinforces that long-term success will depend not only on technology, but also on trusted partnerships, clear governance, sustained collaboration, and continued responsiveness to user needs.

Exhibit ES.1. Summary of recommendations

Group	Recommendation
Cross-cutting	**1.** Clarify the role and core functions of the NSDS and establish clear user journeys.
	2. Provide legal, governance, and documentation support, and shared data standards as core services.
	3. Align and operationalize interoperability, standards, metadata, and data quality for real-world use.
	4. Develop a tiered concierge model for data access and support.
	5. Build scaffolding for users and organizations with lower capacity to engage with an NSDS.
	6. Demonstrate value and reduce burden through priority use-case pathways.
	7. Publish operations, sustainability, and continuous improvement plans.
U.S. territories-specific	**8.** Develop a structured plan and process for meaningful engagement of U.S. territories in NSDS design, implementation, and continuous improvement.
Tribal-specific	**9.** Institutionalize a meaningful Tribal consultation process and ongoing engagement throughout NSDS design, implementation, governance, and future system changes.
	10. Embed Tribal governance, review, stewardship, sovereignty, and decision-making authority into NSDS processes.
	11. Improve Tribal government access to high-quality, relevant, and appropriately governed data through trusted data-sharing pathways.

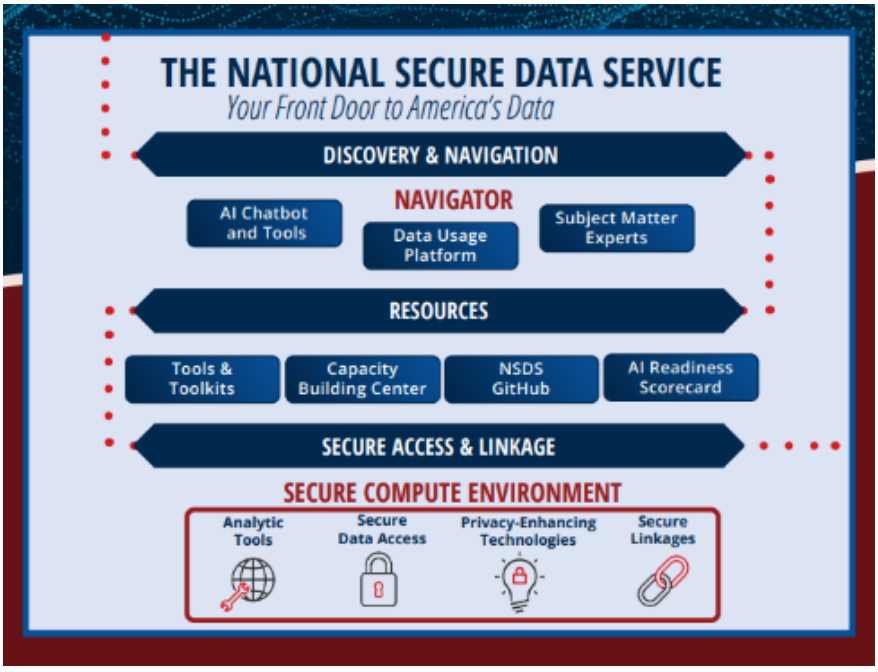
I. Introduction

A. Overview of NSDS

A National Secure Data Service (NSDS) is a shared federal service that includes artificial intelligence (AI)-enabled tools and navigation capabilities designed to help break down data silos, streamline data access, and support data linkage and analysis. An NSDS is authorized through the Creating Helpful Incentives to Produce Semiconductors (CHIPS) and Science Act of 2022 and currently being piloted through a five-year NSDS Demonstration (NSDS-D) led by the National Center for Science and Engineering Statistics (NCSES) at the U.S. National Science Foundation (NSF). An NSDS is intended to improve data access, reduce agency burden, bolster evidence building, and harness AI for trusted data use. As envisioned, an NSDS will feature privacy-enhancing technologies, data linkage and analysis tools, and services that help users navigate a complex government data ecosystem.

For NSDS 1.0, its initial service components align with its planned outcomes (Exhibit 1). The discovery and navigation component includes a prototype tool, called The Navigator, that uses an AI-enabled system to route user requests to appropriate information sources and services. Users will also have the option to contact a human subject matter expert for requests that require judgment, relationship building, legal or governance nuance, or interpretation of complex data needs. An NSDS also includes resources and capacity-building services, such as tools, toolkits, an NSDS GitHub, and a Capacity-Building Center with training and curated resources for users seeking to develop data and evidence-building skills. In addition,NCSES is piloting an NSDS secure compute environment to support privacy-preserving record linkage, secure multiparty computing, collaboration, and high-performance computing for large or computationally intensive data tasks.

Exhibit 1. NSDS 1.0 overview



Source: America's Data Hub Consortium, https://www.americasdatahub.org/wp-content/uploads/2026/03/NSDS-One-Pager_Placemat.pdf.

An NSDS is not intended to serve as a centralized data warehouse. Rather, it would offer a secure compute environment that enables government agencies to retain control over their data, including what information is made discoverable, how data can be accessed, and whether data can be linked to other sources on an NSDS. In this model, government agencies, including the federal statistical agencies and other federal, state, local, territorial, and Tribal government agencies, can provide information about and access to their data so that policymakers, government users, researchers, and other public users can more easily discover relevant data assets and services.

B. Who can benefit from an NSDS

Multiple users may benefit from an NSDS (Exhibit 2). Governments may use an NSDS to make data more discoverable, reduce duplicative infrastructure and access-request burden, as well as support responsible data access, linkage, and analysis while retaining stewardship over their data. Policymakers, researchers, journalists, and other data users may use an NSDS to discover relevant data to inform policy questions, navigate access pathways, and identify appropriate resources or services.

Exhibit 2. Audiences for an NSDS and what it could offer them

Audience	What an NSDS could offer
Federal, state, local, and territorial government agencies	• Easier data discoverability with retained agency control over access, use, and linkage • Shared infrastructure and services that reduce duplicative tools, access-request burden, and secure-use burden • Information about how agency data are to be used and availability of related data sources • Secure cross-agency access, linkage, and analysis services • Capacity building and training for human resources, including data users and decisionmakers
Tribal governments	• Pathways to discover and access relevant government data for Tribal governments • Services that recognize Tribal sovereignty, Tribal Data Governance, and Tribal authority over data • Approaches that recognize Tribal authority over data throughout the data as defined by Tribal Nations • Capacity-building resources and assistance that support Tribal participation without replacing government-to-government consultation or Tribal authority
Policymakers, researchers, academics, and other data users	• A centralized place to discover relevant government data and related services • Data concierge support to answer questions, route users to resources, and help navigate access pathways • Services that provide data users with secure access, privacy-protective analysis, and AI-enabled navigation

Note: Tribal governments are presented separately because they are sovereign Nations with unique legal, governance, and government-to-government relationships that shape their data priorities, responsibilities, and participation in an NSDS.

C. Project context

State, local, territorial, and Tribal governments are the primary potential users of an NSDS and important partners in the broader data ecosystem. These government agencies use data for policy, planning, program improvement, service delivery, emergency response, resource allocation, and evidence building. They also face practical barriers that can limit data use and sharing, including fragmented systems, limited data discoverability, inconsistent documentation, administrative burden, governance and legal uncertainty, privacy and security concerns, workforce constraints, infrastructure limitations, and sustainability challenges.

As the NSDS-D continues, input from government data users and providers plays an important role in informing the technologies, governance models, service approaches, and implementation supports that may shape a permanent NSDS. Mathematica conducted this project on behalf of NCSES to explore how the NSDS could improve capacity for evidence building and data use among state, local, territorial, and Tribal governments.

This project examined needs and gaps related to federal and nonfederal data use, access, linkage, governance, infrastructure, tools, training, technical assistance, and related supports. It also examined how current data practices, policies, workflows, and implementation challenges could inform NSDS design, adoption strategies, and capacity-building supports. Understanding these current conditions can help us identify where shared services could reduce burden, how NSDS supports may need to integrate with existing systems and workflows, and what supports may be necessary for governments to participate effectively. The perspectives of potential government users and other key stakeholders can help NCSES make implementation choices that will increase the likelihood that the NSDS is usable, trusted, low-burden, and relevant across various government contexts.

D. Purpose of this report

This report provides recommendations on how the NSDS can be designed, implemented, and refined to support data access, data linkage, governance, capacity building, and evidence building across government contexts. It focuses on implementation choices that can make the NSDS less burdensome and more usable, trusted, sustainable, and responsive to the needs of federal agencies; state, local, and Tribal governments; and U.S. territories.

The recommendations identify design and implementation priorities that emerged from stakeholder perspectives, landscape scan findings, and the companion needs and gaps report (Milless et al. 2026). They focus on areas where the NSDS could reasonably play a role as a shared service, convener, technical resource, governance support, capacity-building resource, or secure infrastructure for accessing and linking data. The recommendations are not intended to prescribe every technical feature or operational detail of the NSDS.

These recommendations build on prior federal evidence-building efforts, including the Advisory Committee on Data for Evidence Building's vision of NSDS as a shared service that provides coordination, communication, data standardization, and capacity-building supports across the evidence ecosystem (2022). This report extends that foundation by focusing specifically on the implementation choices, user

supports, governance structures, and relationship-based engagement needed for state, local, territorial, and Tribal governments to participate in and use an NSDS effectively.

Where relevant, the report recommends ways that the NSDS could provide supports for government agencies, distinguishing between issues the NSDS could address directly, issues it could help coordinate around, and broader contextual challenges that may require action by other federal, state, local, territorial, or Tribal partners.

Relationship with the needs and gaps report

This recommendations report is a companion to a needs and gaps report developed through the same capacity-building effort (Milless et al. 2026). The needs and gaps report identifies data-related needs, barriers, and contextual considerations for state, local, territorial, and Tribal governments. This report expands those findings by recommending how NSDS supports and implementation strategies could respond to those needs and gaps.

For the purposes of this report, "needs" refer to the supports, resources, and services governments require to use data effectively. "Gaps" refer to barriers, constraints, unmet supports, and implementation challenges that limit a government's ability to meet those needs.

Recommendation structure and implementation road map

The report presents three sets of recommendations: (1) cross-cutting, (2) U.S. territory-specific, and (3) Tribal-specific. Cross-cutting recommendations focus on implementation issues that are relevant across multiple government contexts, including federal agencies, state governments, local governments, U.S. territories, and Tribal concerns. U.S. territories have different governance and data-capacity contexts and a different relationship with the federal government that warrants a dedicated recommendation. Tribal-specific recommendations stem from Tribal data needs and governance considerations shaped by Tribal sovereignty, Indigenous Data Sovereignty, self-determination, trust responsibility, historical misuse of data, and government-to-government relationships. Each recommendation explains the suggested action, why it matters, and the need or gap it addresses. We also describe considerations by context where relevant.

This report concludes with an implementation road map that organizes recommended actions by near-, medium-, and long-term priorities.

II. Methods

The needs and gaps report examined barriers and opportunities related to evidence-building capacity across state, local, territorial, and Tribal governments to inform considerations related to the NSDS (Milless et al. 2026). The project employed a qualitative approach that combined primary and secondary data collection. Primary data collection included a small number of structured conversations with federal staff and subject matter experts and a series of project-hosted webinars with panel discussions featuring state, local, and Tribal government representatives. Secondary data collection included a systematic landscape review of publicly available documents, webinars, and conference materials, with attention to data sharing, integration, governance, infrastructure, privacy, security, AI, and evidence building. In addition, members of the project team attended a selection of conferences in 2025 and 2026 to document topics discussed within sessions. Because broader engagement with data users was outside the scope of the project, the study relied substantially on publicly available materials and existing forums where government leaders, practitioners, researchers, and federal partners had documented their experiences. The project also convened a Tribal expert panel and a panel of state, local, and territorial representatives that provided input on the study design and findings.

Because Tribal governments are sovereign nations, the Tribal landscape review drew on different evidence sources and engagement approaches than the state, local, and territorial review. The review emphasized Tribal-specific sources, including Tribal consultations and listening sessions, Indigenous Data Sovereignty and Indigenous Data Governance scholarship, Tribal-focused conferences, materials developed by Tribal organizations and practitioners, structured conversations, and input from the Tribal expert panel. The sources used for federal, state, local, territorial, and Tribal jurisdictions provide insight into recurring themes but should not be interpreted as representing all governments and agencies. Further, in reference to Tribes, this work does not substitute for government-to-government consultation regarding the NSDS.

A. Data analysis

Data from structured conversations, expert panel convenings, and the landscape review were analyzed using a structured thematic coding approach aligned with the study's goals as well as the needs and gaps framework. Content was initially categorized according to whether it described current conditions, identified barriers or challenges, highlighted opportunities or promising practices, or identified areas requiring further exploration. Materials were then coded using a thematic codebook that included topics such as data governance, data sharing, interoperability, workforce capacity, funding, infrastructure, privacy and security, intergovernmental coordination, evidence building, and Indigenous Data Sovereignty. For Tribal materials, additional attention was given to themes related to Tribal sovereignty and governance, data sovereignty, culturally grounded approaches, and federal–Tribal relationships.

Across sources, the project team synthesized findings to identify recurring needs, gaps, barriers, opportunities, and implementation considerations relevant to NSDS design, governance, capacity building, adoption, and sustainability. Structured conversations, webinars, and expert panels provided focused insight into data users' perspectives and helped contextualize findings from the landscape review. The landscape review identified recurring themes and emerging practices across publicly available literature, reports, conference materials, webinars, and other sources. Tribal-specific sources were

interpreted separately to account for Tribal sovereignty, Indigenous Data Governance, federal–Tribal relationships, and the distinct status of Tribal governments.

A detailed overview of the data sources and analytic approach is available in the companion needs and gaps report (Milless et al. 2026).

B. Development of recommendations

The recommendations were developed by synthesizing findings across multiple sources, including structured conversations, webinars, discussions with expert panels, meetings, landscape review findings, and the companion needs and gaps report. The team reviewed recurring themes across these sources, identified areas where needs and gaps aligned with potential NSDS roles, and translated those themes into implementation-focused recommendations. Recommendations were further refined to distinguish between actions the NSDS could directly support, areas where the NSDS could serve as a convener or shared resource, and broader contextual challenges that may require action by federal, state, local, territorial, or Tribal partners. We obtained input on these recommendations from the project's expert panel and Tribal expert panel as well as partner organizations including the National Association of Counties, the Council of State Governments, the National Governors Association, and the National Indian Health Board.

C. Limitations

Study limitations should be considered when interpreting the findings. First, the needs and gaps study was based on purposively selected structured conversations, project-hosted webinars, and publicly available sources, restricting the generalizability of findings. Structured conversation respondents and panelists represented a small, nonrandom proportion of relevant data experts across levels of government, and a limited number of government data experts participated in the webinars and consultations. The availability of perspectives also varied across data user groups and government contexts. Perspectives from federal agencies, Tribal health organizations, and well-established data initiatives were more readily available, while perspectives from territorial governments were not well represented in the available sources. Therefore, these findings should not be interpreted as representative of all levels of government.

Publicly available materials may also overrepresent organizations or sectors with greater visibility, resources, or established data initiatives. Emerging, informal, locally driven, or lower-capacity efforts may be underrepresented in this studies' data sources. This limitation may be particularly relevant for smaller jurisdictions and Tribal governments with limited capacity to publish reports, present at conferences, or participate in national forums. Similarly, some areas of the literature concentrated on specific policy domains. For example, much of the peer-reviewed literature addressing Tribal data systems focuses on public health, epidemiology, and surveillance. Although many findings are relevant across sectors, the perspectives of some sectors may be overrepresented.

III. Overview of recommendations for the NSDS

This report presents 11 practical recommendations for strengthening the design, implementation, and adoption of the NSDS as it relates to the evidence-building capacity of state, local, territory, and Tribal governments. The recommendations are organized into three groups:

- Seven cross-cutting recommendations that apply broadly across government contexts
- One recommendation focused specifically on U.S. territories
- Three Tribal-specific recommendations that address distinct Tribal sovereignty, governance, stewardship, and trust considerations

Although the cross-cutting recommendations are broadly relevant across government contexts, implementation should be tailored to the governance, capacity, infrastructure, and trust considerations described in the needs and gaps report. In particular, Tribal Nations are sovereign governments with distinct data governance and consultation considerations, while U.S. territories have distinct relationships with the federal government and may face different infrastructure, resource, and data visibility challenges.

Our findings suggest that NSDS is already focused on many of the right components. The recommendations therefore focus on implementation choices that can make those components more usable, trusted, low-burden, and effective across government contexts.

Exhibit 3. Summary of recommendations

Group	Recommendation
Cross-cutting	**1.** Clarify the role and core functions of the NSDS and establish clear user journeys.
	2. Provide legal, governance, and documentation support, and shared data standards as core services.
	3. Align and operationalize interoperability, standards, metadata, and data quality for real-world use.
	4. Develop a tiered concierge model for data access and support.
	5. Build scaffolding for users and organizations with lower capacity to engage with an NSDS.
	6. Demonstrate value and reduce burden through priority use-case pathways.
	7. Publish operations, sustainability, and continuous improvement plans.
U.S. territories-specific	**8.** Develop a structured plan and process for meaningful engagement of U.S. territories in NSDS design, implementation, and continuous improvement.
Tribal-specific	**9.** Institutionalize a meaningful Tribal consultation process and ongoing engagement throughout NSDS design, implementation, governance, and future system changes.
	10. Embed Tribal governance, review, stewardship, sovereignty, and decision-making authority into NSDS processes.
	11. Improve Tribal access to high-quality, relevant, and appropriately governed data through trusted data-sharing pathways.

IV. Cross-cutting Recommendations

A. Recommendation 1: Clarify the role and core functions of the NSDS and establish clear user journeys.

We recommend that the NSDS clearly define the services it provides, who those services are for, how different users would engage with the system, and what users can expect at each stage of engagement. Clarifying those core functions means explaining how NSDS components relate to one another, what an NSDS can support directly, and what functions fall outside the scope of the NSDS.

Potential core functions of the NSDS

- Discovery and navigation tools
- Sources of human support and technical assistance
- Governance, legal, and documentation support
- Secure environments for access, linkage, and analysis
- Capacity-building resources
- Shared services that can reduce duplicative agency burden

This recommendation responds most directly to the need for practical access described in the needs and gaps report and repeated often by stakeholders and experts: Government agencies must be able to find, understand, access, and use relevant data without excessive burden. Potential NSDS users may have difficulty knowing what data exist, who holds them, what the data contain, whether the data are appropriate for a specific question, and what steps are required to request or use them. Clear descriptions of the NSDS's core functions and user journeys can help potential users understand where to begin, what support is available, what responsibilities they retain, and when the NSDS can help directly versus when referral or coordination with another agency may be needed.

In this recommendation, user journeys refer to practical, role-based depictions of how different users would interact with the NSDS, from an initial question or task through discovery, support, access or stewardship decisions. It also covers next steps. These user journeys should go beyond static NSDS 101 overview materials by showing the sequence of actions, decision points, supports, responsibilities, and burden-reduction opportunities users may experience when engaging with the NSDS.

Beyond communications or branding, the recommendation is also about service design. The NSDS should enable different users to quickly understand what the system does, what it does not do, what support is available, what responsibilities they retain, and what value they can expect from participating. This recommendation is not intended to suggest fully demonstrating the value of the NSDS through detailed priority use cases. Instead, it focuses on helping users understand where the NSDS fits within their work before they can assess whether it would be useful for a specific problem.

Experts who participated in structured conversations agreed that users are more likely to engage with the NSDS if they understand how it would help them answer practical questions, reduce burden, preserve control, and support their own goals. Data providers are more likely to participate if they understand what data would be visible, what data would remain under their control, how access decisions would be made, and what privacy, security, and governance protections would apply. A clear explanation of NSDS core functions can also help manage expectations by identifying which requests the service can address

directly, which requests require referral or coordination with another agency, and which issues fall outside of its scope.

Recommended steps for the NSDS

> "We simply have less human capacity right now… [Staff may lack the] capacity or bandwidth to think about innovative approaches for data sharing or analysis."
>
> —Federal data leader on why staff might not engage with an NSDS

Develop a plain-language description of the NSDS's role, intended users, and core functions. This concise, public-facing description should communicate what the NSDS offers, who can use it, what types of questions or tasks it can support, and what users can expect when they engage with it. The description should distinguish among core service areas and what each of them do, including discovery and navigation, data access support, data linkage support, secure analysis environments, privacy-preserving technologies, support from human subject matter experts, capacity-building resources, and governance, legal, standards, and documentation support. To increase accessibility and reach, NSDS could consider disseminating this description through multiple channels such as webpages, FAQs, diagrams, short-form videos, and guided walkthroughs in addition to traditional documentation.

The description should explain how AI-enabled tools and human support interact, including when a user can rely on self-service navigation and when human assistance is available or recommended. The description should also explain what the NSDS is not. For example, user-facing materials should clearly and consistently state that the NSDS is not intended as a centralized data warehouse and that agencies retain control over their data, what is discoverable, and whether or how data can be linked. The description should be specific enough that even potential users unfamiliar with the federal statistical system can understand whether the NSDS is relevant to their needs.

Each user journey should describe:

- The user's role or context
- The problem or question the user might bring to the NSDS
- The NSDS entry point
- What support the user receives
- What decisions or permissions are required
- What data or metadata may be discovered or accessed
- What information remains restricted, who controls access, and how requests are reviewed or routed
- What outputs or next steps the user can expect
- What responsibilities remain with the user or data provider

Establish clear user journeys. User journeys should cover major user groups, including federal agencies, state governments, local governments, U.S. territories, Tribal governments, researchers, and other public data users. These illustrative scenarios should show how different users would use the NSDS to answer a practical question or complete a data-related task. They should clarify entry points, available supports, data stewardship responsibilities, decision points, and expected benefits. They are not a substitute for the more detailed priority use cases described in Recommendation 6.

User journeys should be organized around real-world tasks rather than internal NSDS components. Examples could include the following:

- "I need to find federal data relevant to a state policy question."
- "I want to know whether another agency has data that could help answer a program evaluation question."
- "I need to securely link administrative data from multiple systems to estimate the impact of a program change."
- "I want to list my agency's data in the NSDS so others can find it, but I need to retain control over access, approval, and use."
- "I need help navigating legal or governance requirements."
- "I want training or technical assistance before using NSDS tools."

User journeys should include pathways for data users and data providers, because users who contribute, steward, or authorize access to data may have different questions or concerns than users only seeking to discover or analyze data. User journeys should make clear where NSDS reduces burden and where participation may still require agency time, governance decisions, legal review, technical preparation, or capacity building. For key user journeys, the NSDS could show how a task might proceed with and without NSDS support, including where the NSDS could reduce steps, avoid duplicative requests, shorten time to discovery or access, or resolve common points of confusion. For user journeys involving U.S. territories, Tribal governments, or sensitive data, the NSDS should make clear when additional governance, stewardship, review, or consultation considerations may apply and how users would be routed to the appropriate data steward, contact, or review process.

Use differentiated interfaces and entry points to operationalize user journeys. The NSDS should identify the interfaces, guided workflows, or entry points needed to make user journeys practical for different users. These components should help users quickly locate the pathway that fits their role, task, capacity, and governance responsibilities, rather than requiring all users to navigate the same generic process.

For example:

- **Federal agency data stewards** may need information about shared infrastructure, burden reduction, access controls, and data stewardship.
- **State agencies** may need pathways for cross-agency linkage, federal-to-state data access, governance templates, and evidence-building use cases.
- **Local governments**, particularly small agencies, may need streamlined navigation, practical use cases, and capacity-building supports.
- **U.S. territories** may need pathways that address federal data gaps, resource constraints, and territorial governance contexts.
- **Tribal governments** may need role-based navigation that identifies when Tribal review, consent, governance, consultation, or stewardship expectations apply and how Tribal-related requests are routed to appropriate approval, review, or support processes.

Differentiated interfaces could be implemented through tailored landing pages, guided intake questions, role-based dashboards, user-type filters, or customized support pathways. Any differentiated interface should avoid hard-coding assumptions about user capacity. For example, a small local government, a large county, a state agency, a territorial agency, and a Tribal government may each have a different level of data maturity and should be able to choose the pathway that fits their needs.

Clearly communicate value propositions by user type to support user journeys. Each user journey should be paired with a clear value proposition that explains why that pathway is useful for the intended user and what benefit the user can expect from engaging with the NSDS.

- **For federal agencies**, the value proposition may include reduced duplicative infrastructure, more efficient access processes, reusable tools, shared secure compute environments, and improved visibility into data use.
- **For states**, the value proposition may include support for cross-agency evidence building, linkage with federal data, governance and documentation support, and reduced burden in navigating federal data access processes.
- **For local governments**, the value proposition may include practical data navigation, access to relevant federal or state data, technical assistance, training, and support for service delivery, planning, and funding decisions.
- **For U.S. territories**, the value proposition should explicitly address how the NSDS could support territorial priorities, improve visibility of territorial data needs, reduce federal data gaps, and provide territory-specific support for accessing, understanding, and using relevant data.
- **For Tribal governments**, the value proposition should be framed around Tribal priorities, Tribal data governance, self-determination, appropriate stewardship, and benefits to Tribal communities, not merely federal access to Tribal data.
- **For researchers and other public users**, the value proposition may include better discovery of relevant data, clearer documentation, improved access pathways, and support for responsible use.

Build trust by clarifying control, consent, and stewardship. The NSDS should clearly explain who controls data at each point in the user journey. It should describe what information can be discovered through the platform, what information remains restricted, and what decisions data stewards retain. In addition, it should clarify how access requests are reviewed, who approves them, what governance processes apply, and what protections are in place for sensitive data. For territories and Tribes, the NSDS should explain how participation would avoid one-directional extraction and instead support reciprocal benefit, local or Tribal priorities, appropriate consent, and stewardship. For use of Tribal data, the NSDS should build Tribal review, consent, governance, or consultation processes into relevant access, discovery, and linkage user journeys. This includes clarifying when these processes apply, who must be involved, and how requests should be routed or paused for appropriate Tribal review.

B. Recommendation 2: Provide legal, governance, and documentation support, and shared data standards as core services.

We recommend that the NSDS should treat governance, legal, and documentation support and shared data standards as a core service layer rather than as a secondary support function or a collection of resources that users must navigate independently. Responsible data use depends on users' ability to understand legal requirements, governance processes, stewardship responsibilities, documentation standards, and data-sharing expectations. Many barriers to data sharing are administrative rather than technical. Therefore, the NSDS should be designed not only as a technical platform for discovery, access, linkage, and analysis, but also as a governance and coordination service that helps users understand and navigate the rules, roles, agreements, documentation, and decision points that make responsible data use possible. Governance and coordination supports that recognize the following dependencies would be central to multiple NSDS functions:

1. Discovery depends on knowing what data exist and who controls them.
2. Access depends on clear permissions and agreements.
3. Linkage depends on shared definitions and governance.
4. Secure analysis depends on trusted stewardship and disclosure rules.
5. Capacity-building depends on guidance and documentation.

Our findings suggest that agencies across the country recognize the value of sharing or linking data but encounter delays because of uncertainty regarding legal authorities, privacy requirements, approval processes, or stewardship responsibilities. State and local data experts and other stakeholders indicated that data-sharing agreements and memoranda of understanding are often developed separately for each use case, creating substantial administrative burden and slowing progress even when there is broad support for collaboration. Documentation and standards challenges create similar barriers. Even when users can discover and access data, experts agree that they may not be able to interpret, compare, link, or reuse those data without clear metadata, variable definitions, data dictionaries, quality information, and documentation of known limitations. Inconsistent definitions, incomplete documentation, and uncertainty regarding linkage feasibility can reduce the usefulness of otherwise valuable data assets. These challenges are particularly significant for cross-agency, cross-sector, and intergovernmental use cases, where data may move across different legal authorities, privacy requirements, governance structures, technical systems, and organizational cultures.

Governance and legal support should include practical assistance, such as a toolkit with templates and best practices for data-sharing agreements, memoranda of understanding, data-use agreements, privacy requirements, access authorization processes, stewardship responsibilities, disclosure review expectations, and related governance requirements. Documentation and standards support should help users understand data definitions, metadata, data dictionaries, common data models, linkage requirements, data-quality information, and limitations on interpretation or reuse. Federal agencies may need help aligning NSDS processes with existing statistical, privacy, disclosure, and data stewardship requirements, while states may need help coordinating across agencies with different missions, legal interpretations, data systems, and statewide governance structures.

This recommendation does not imply that the NSDS should replace agency counsel, data stewards, privacy officials, or existing governance bodies. Rather, the NSDS should provide reusable tools, coordination structures, templates, guidance, and expert assistance that help agencies and users move through these processes more consistently and efficiently, while preserving the authority of agencies, governments, and data stewards to make decisions about their own data. The NSDS could engage data experts and user groups to develop common standards and practices and become the primary destination for users seeking guidance, examples, and best practices.

> "I think the issue is for the most part, we do not get guidance from the federal government. And so, we have our own individual agency attorneys interpreting federal regulations…. Additional guidance from the federal government and a review of the existing privacy laws … can be so beneficial."
>
> —State data leader on reducing the burden for states trying to use data for evidence building

A strong governance and documentation service layer is essential for the NSDS to reduce burden, expand responsible data use, and build trust across participating organizations. Without these supports, the NSDS risks being perceived as another platform that helps users identify data but leaves them to resolve the most difficult implementation barriers on their own.

Recommended steps for the NSDS

Establish governance, legal, and documentation support as a formal core service area for the NSDS. The NSDS should frame this service as a way to make lawful and responsible data use easier, while complying with existing governance, legal, or privacy requirements. Alongside discovery and navigation, capacity building, and secure access and linkage, this service area should be visible in the NSDS model, user journeys, public-facing materials, and implementation road map.

The NSDS should explain what kinds of support users can expect, what kinds of questions it can help answer, and when users will need to rely on their own agency counsel, privacy officials, data stewards, or governance bodies. The service should support both data users and data providers. Data users need support understanding access pathways and use conditions, while data providers need support documenting data, defining stewardship conditions, and evaluating requests consistently.

> "An NSDS could be an enabler by providing the environment, the guidance, ease of access, [a] data dictionary, … common data models, … [and] training on how to use an NSDS to people in state and local governments—that's huge."
>
> —State data leader

Provide reusable governance and data-sharing tools. The NSDS should curate templates, model language, checklists, and workflows that help users and data providers navigate common governance and data-sharing processes. These tools should be based on best practices and promising examples around the country (see Exhibit 4).

The tools should be modular so they can be adapted to different legal authorities, data sensitivity levels, agencies, jurisdictions, and use cases. Where possible, the NSDS should identify which elements are broadly reusable and which require agency-specific, jurisdiction-specific, or use-case-specific review. Tools and templates are not intended to resolve all legal or governance questions; rather, they should reduce the need to start from scratch, help users identify issues that require review, and promote greater consistency across common scenarios.

Exhibit 4. Reusable governance and data-sharing tools

- Model data-use agreement provisions
- Model memorandum of understanding provisions
- Data-sharing request checklists
- Access review workflows
- Roles and responsibilities matrices
- Stewardship and decision-rights templates
- Privacy and confidentiality review checklists
- Disclosure review expectations
- Documentation requirements for data providers
- Decision trees for determining when different access, linkage, or analysis pathways may be appropriate

Provide expert support for complex governance and legal questions. The NSDS should include access to human expertise for requests that involve legal interpretation, cross-agency coordination, sensitive data, intergovernmental data sharing, Tribal data governance, or complex linkage. Though templates, guidance, and self-service tools can address many common needs, some requests will require interpretation, facilitation, or coordination that cannot be fully standardized. Importantly, expert support should be available early in the user journey rather than only after challenges arise. Early consultation can help users design feasible access, linkage, or analysis approaches; identify governance requirements in advance; and avoid delays later in the process.

Expert support could include staff or consultants with knowledge of data governance, privacy, confidentiality, statistical agency requirements, interagency data sharing, secure access models, and documentation standards. The NSDS should define the boundaries and limitations of this support. For example, it may provide navigation, templates, examples, coordination support, and information about common practices, while clarifying that formal legal advice or final authorization remains with the relevant agency or governing body.

The NSDS should consider bringing experts together to create committees that clarify frequently asked questions about interpretation of federal laws and statutes across states and local jurisdictions. Findings suggest that federal statutes and privacy requirements related to data are interpreted differently across states, agencies, or programs. Developing expert guidance documents could help standardize legal interpretations regarding data sharing and use.

Build shared documentation expectations into NSDS supports. The NSDS should define minimum documentation expectations for data sets or metadata it makes discoverable. Documentation should help users understand what data represent, how they were collected, what variables mean, what populations are included or excluded, what quality limitations exist, and what restrictions apply to access or reuse.

The NSDS should encourage or support common documentation elements (see Exhibit 5). The goal is not to impose unnecessary reporting requirements, but to ensure that users have enough information to make informed decisions about whether a data set meets their needs.

Exhibit 5. Common documentation elements

- Data set descriptions
- Detailed data dictionary
- Data-quality notes
- Collection frequency and timeliness
- Suppression and disclosure limitations
- Linkage-relevant variables
- Known comparability issues
- Conditions for access and reuse

The NSDS should establish a set of minimum metadata and documentation expectations that enable users to understand whether a data set is suitable for their needs. These expectations should focus on the information necessary to support discovery, interpretation, linkage, and responsible use rather than on comprehensive technical documentation that may create unnecessary burden. A standard metadata package could include core definitions and field descriptions, known limitations and caveats, timeliness, and update frequency. The NSDS should provide templates and examples to support consistent implementation and encourage ongoing maintenance and updates to metadata.

Documentation should be useful to both technical and nontechnical audiences. Where appropriate, the NSDS should encourage the development of plain-language summaries that complement more detailed technical documentation. These summaries could help policymakers, program administrators, community organizations, and other users quickly understand the purpose, strengths, and limitations of available data resources.

The NSDS should also recognize variation in organizational capacity. Some agencies may already maintain mature metadata systems and detailed documentation practices, while others may have limited resources available for these activities. Local and territorial governments in particular may need additional capacity-building supports. The NSDS should therefore adopt a tiered approach that allows organizations to participate with a basic level of documentation while providing technical assistance to improve documentation quality over time.

Support common definitions, standards, and linkage readiness. The NSDS should help users and data providers promote consistent definitions, formats, identifiers, metadata, or data-quality issues and identify where inconsistencies may limit access, interpretation, or linkage. These issues frequently emerge when organizations attempt to combine data from multiple sources and can create substantial barriers even when legal and technical access requirements have been addressed.

The NSDS should help users assess linkage readiness by providing information about relevant identifiers, variable definitions, coverage, missingness, data-quality considerations, and governance permissions. Helping users understand these factors early in the process can reduce wasted effort and improve planning for linkage projects.

The NSDS should provide guidance on metadata standards, data dictionaries, documentation practices, and other approaches that can reduce ambiguity and improve consistency across data assets. The objective should not be to require all organizations to collect data in the same way, but rather to make differences more visible and easier to understand.

The NSDS should distinguish between supporting shared standards and requiring uniformity. The goal should be to make data understandable and linkable where appropriate, while recognizing that agencies and governments collect data under different laws, missions, and program requirements.

C. Recommendation 3: Align and operationalize interoperability, standards, metadata, and data quality for real-world use.

We recommend that the NSDS should focus on aligning, harmonizing, and operationalizing existing efforts so data can be understood consistently and used across systems and sectors. Users often encounter multiple standards that describe similar concepts, inconsistent terminology across agencies, or incomplete documentation that makes it difficult to determine whether data sets can be combined or compared. Whereas Recommendation 2 focuses on helping agencies create and maintain high-quality governance and documentation resources, this recommendation focuses on aligning and applying those resources so existing data can be reliably discovered, linked, compared, and reused." In many cases, organizations spend substantial time reconciling differences among data sets manually before analysis can begin. Rather than developing new standards, NSDS could help users navigate and apply the standards, definitions, and documentation that already exist, while identifying opportunities to reduce data fragmentation and improve interoperability.

Many data systems were not designed to support interoperability. As data users seek ways to leverage, share, and link data from separate systems, fragmentation and interoperability challenges are key barriers to those efforts. Experts reported that data are fragmented across different agencies, programs, or platforms, making them difficult to share, and varying standards, inconsistent or incomplete metadata, and varying data documentation quality makes data difficult to interpret or combine. As a result, data that is technically available is often not usable in practice without significant effort or prior knowledge. Available documentation and metadata are often incomplete, inconsistent across organizations, or not maintained as data evolve. Users need to understand whether data is sufficiently complete, timely, accurate, and well documented for a particular purpose rather than whether they meet an abstract standard of quality. A data set that is appropriate for one use case may not be appropriate for another, making fit-for-purpose guidance particularly important.

Because these challenges occur across multiple agencies and levels of government, they cannot be addressed solely through organization-specific initiatives. The NSDS can play a critical role in reducing fragmentation and ensuring that interoperability, metadata, and data-quality improvements are practical, consistent, and tied to real workflows. This includes promoting common definitions where appropriate, developing reusable crosswalks between existing standards, improving metadata and documentation practices, and providing guidance that helps users understand whether data are fit for their intended purpose. By emphasizing practical implementation rather than new requirements, NSDS can reduce unnecessary burden while improving the consistency and usability of data across systems. NSDS will be well positioned to reduce fragmentation by promoting practical approaches to interoperability that support consistent interpretation and reuse while respecting differences in agency missions, governance authorities, and data-collection practices.

Recommended Steps for the NSDS

Align existing standards across federal efforts. NSDS should engage data experts to help conduct and maintain a mapping of key federal data standards, data models, and definitions across agencies. This effort should identify areas where overlapping or conflicting approaches create unnecessary complexity for users seeking to combine or compare data across systems. Alignment efforts should focus first on high-priority domains where inconsistent definitions create substantial barriers to cross-agency collaboration or evidence building. This effort should enable the NSDS to develop and promote shared definitions or crosswalks, rather than introducing new competing definitions or standards. States can play a critical intermediary role by translating federal guidance into practical implementation approaches and reducing fragmentation across agencies within their jurisdictions.

Support reusable approaches to standardization and data harmonization. Even when varying standards are understood, data users often need practical support for reconciling differences across data sets to make them usable. NSDS should provide practical guidance and tools that help agencies and jurisdictions reconcile differences across data sets and improve data sharing more broadly, rather than concentrate efforts on one-off transformations. NSDS should provide guidance for normalizing key fields, such as identifiers, dates, and service categories and applying consistent formats and definitions across data sets. Federal agencies should take the lead in aligning and harmonizing standards, particularly where conflicting definitions create barriers to cross-system use and should maintain shared resources such as crosswalks and metadata templates.

Define fit-for-purpose data-quality benchmarks. NSDS should help users assess whether data are of suitable quality for a specific decision-making or evidence-building purpose. It should develop guidance describing the types of data-quality considerations users should evaluate before using available data sets and clarify what levels of completeness, timeliness, and accuracy are sufficient to support decisions. NSDS should communicate data-quality limitations clearly so that users can make informed decisions without requiring extensive prior knowledge of a data set.

Validate interoperability through real-world use. NSDS should encourage agencies to test and evaluate interoperability through validation exercises based on use cases, not just system design. Demonstrating that data can be successfully discovered, interpreted, combined, and used to answer real policy or operational questions provides stronger evidence of interoperability than technical specifications alone. NSDS should document and share common challenges and solutions.

D. Recommendation 4: Develop a tiered concierge model for data access and support.

This recommendation calls for a tiered concierge model that provides multiple pathways for users to access NSDS and receive support, triaging data access and support issues between AI-powered tools and human experts. Rather than relying primarily on AI-enabled tools, the NSDS should allow users access to self-service tools, AI-assisted navigation, human experts, and dedicated support channels depending on the complexity, sensitivity, and context of their request. This model would help the NSDS use AI where it can improve efficiency while preserving human judgment where users need trust and relationship-building, governance support, or context-specific assistance. Importantly, human support staff can still use

AI tools to answer user questions and ensure efficient responses. This approach improves usability, trust, and equitable access, while ensuring that support systems are responsive to real-world variation in user capabilities and contexts.

This recommendation addresses several related needs and gaps. Potential NSDS users may face fragmented or unclear pathways for obtaining help, identifying data owners, understanding access requirements, or determining whether data can be used for a particular purpose. Members of our expert panels indicated that some users may be comfortable starting with an AI-assisted tool, while others may need direct human support from the beginning because of limited staff capacity, limited familiarity with federal data systems, accessibility needs, data sensitivity, or trust concerns[1]. Users may be reluctant to rely on AI when responses are difficult to verify, limitations are unclear, or there is no easy path to human assistance; transparency, reliable source information, and seamless escalation can help address these concerns. Human support is especially important for complex questions involving data governance, legal interpretation, Tribal Data Sovereignty, U.S. territory engagement, sensitive data, cross-agency coordination, or questions that require understanding the user's operating context. Without providing sufficient and accessible options, the NSDS could become *easier* for already sophisticated users to navigate while remaining difficult or creating mistrust for users who need more tailored support.

> "People generally will use an AI concierge when it saves time and produces reliable results. They tend to stop using it when it gives generic answers, is difficult to trust, or becomes a dead end. The real challenge is building trust through accuracy, transparency, and seamless escalation to a human when needed."
>
> —Expert panel member

Recommended Steps for the NSDS

Design and promote a tiered support approach. A tiered support approach should clearly explain the types of assistance available and when each pathway is appropriate. The framework should include AI-enabled tools for discovery, navigation, and structured workflows; clear escalation pathways to human support; access to subject matter experts for complex inquiries; and dedicated support channels or partnership models for priority user groups that may require more sustained engagement. These supports should be visible in the NSDS user experience so that users understand from the outset that they are not limited to a chatbot or self-service tool.

Define when AI or human supports are most appropriate. NSDS should establish clear parameters for when AI-enabled tools are appropriate and when users should be directed to human support. AI may be useful for helping users identify relevant data sets, understand common access requirements, locate documentation, summarize policies, or route questions to the appropriate resource. Human support should be available for requests that involve uncertainty, sensitive data, legal or governance interpretation, complex data linkage, cross-jurisdictional coordination, Tribal consultation or review, U.S.

[1] The companion needs and gaps report discusses trust in AI in greater detail (Milless et al. 2026). In this recommendation, trust refers specifically to the conditions that allow users to evaluate and appropriately rely on AI-enabled NSDS support, including transparency, reliability, clear limitations, accountability, opportunities for correction, and access to human review or assistance.

territory engagement, or questions where the consequences of error are high. Importantly, as state data experts indicated, AI tools are best in contexts with extensive documentation and may be less reliable when documentation is weak or nonexistent. For AI chatbots, the NSDS should also make it easy for users to escalate their request and obtain human assistance without having to repeatedly restate their question or navigate multiple disconnected support channels.

Make AI engagement transparent. The NSDS should be transparent about whether users are interacting with an AI-enabled tool, a human expert, or a combination of both. Users should know when an answer has been generated by AI, what sources the response draws from and how to cite them (or the AI tool), whether a human has reviewed the answer, and when the user should seek additional support. AI-enabled tools should include mechanisms for correction, feedback, and escalation, especially when information is incomplete, outdated, uncertain, or dependent on agency-specific rules. This transparency is central to building trust and reducing the risk that users rely on generic or inaccurate guidance. Several Tribal experts noted that AI technologies are evolving rapidly and may enable secondary uses of Tribal data that were not originally anticipated, underscoring the need for proactive governance, researcher education, and safeguards before data are collected or shared. Tribal experts stressed that AI should not diminish established best practices for Tribal research and data governance, including meaningful Tribal engagement, consultation, and respect for Indigenous Data Sovereignty throughout the data life cycle. Together, source transparency, clear communication of limitations, mechanisms for correction and feedback, and seamless escalation to human support are central to building appropriate trust and reducing the risk that users rely on generic, inaccurate, or contextually inappropriate guidance.

Tribal experts also highlighted the importance of developing Tribal governance frameworks to guide the responsible use of AI and other digital technologies. Several pointed to ongoing efforts to develop model Tribal policies, codes, and digital sovereignty toolkits—including Cherokee Nation's AI policy—as promising examples, while noting that many Tribal Nations are only beginning internal discussions about AI governance, digital infrastructure, cloud storage, and data stewardship. Others cautioned that incorporating AI into the NSDS could undermine Tribal trust, particularly if users perceived Tribal data as being used to train AI systems. Participants therefore recommended clear policies regarding AI use and emphasized that certain categories of data—including individually identifiable health and genetic information, and Tribal enrollment records—may warrant heightened protections or exclusion from AI-enabled systems, while recognizing that comfort with data sharing varies by data type and context.

Provide efficient access to subject matter experts. NSDS should also ensure efficient access to human subject matter experts who can support more complex inquiries. These experts may include staff with knowledge of federal statistical systems, data governance, data access processes, privacy and confidentiality requirements, data linkage, metadata and documentation, AI-enabled tools, and priority policy domains. Subject matter experts should not be limited to technical troubleshooting. They should help users frame questions, identify feasible data pathways, interpret documentation, understand access conditions, and determine whether a request requires additional legal, governance, or agency review.

Create dedicated support channels for priority users. For U.S. territories and Tribal governments, NSDS should consider dedicated support channels or relationship-based partnership models. These users may require more than general help desk support because their engagement with NSDS may involve distinct

governance structures, resource constraints, strained federal relationships, sovereignty considerations, or historical trust concerns. In both contexts, the NSDS should avoid defaulting to AI-first solutions where relationship-based engagement is needed to build trust and clarify mutual benefit.

Use support data for continuous improvement. NSDS should also monitor how users move through the concierge model. User feedback, escalation patterns, unresolved questions, and repeated points of confusion should inform improvements to AI tools, documentation, training, governance guidance, and human support staffing. If users frequently escalate the same type of question, NSDS should consider whether the AI tool, user pathway, documentation, or underlying policy guidance needs to be improved. In this way, the concierge model can become part of NSDS's continuous improvement approach rather than a static support function.

E. Recommendation 5: Build scaffolding for users and organizations with lower capacity to engage with an NSDS

This recommendation calls for NSDS to provide scaffolding for users and organizations with limited staff time, technical expertise, or specialized support. In this context, "scaffolding" means lightweight resources that help users get started, complete common tasks, and continue using NSDS without reviewing extensive materials or creating new workflows from scratch.

Capacity scaffolding should be flexible enough to reflect different government contexts. For U.S. territories, NSDS should develop supports with territorial users, so materials reflect territorial staffing, infrastructure, language access[2], data gaps, and federal statistical inclusion issues. For Tribal Nations, scaffolding should align with the Tribal-specific recommendations in this report and should not substitute for consultation, relationship-building, or Tribal governance processes. Any Tribal-facing supports should be developed with Tribal partners and respect Tribal sovereignty, Indigenous Data Sovereignty, Tribal decision-making authority, and government-to-government consultation.

The needs and gaps analysis found that many governments lack staff time, technical expertise, data literacy, implementation capacity, and funding. These constraints can make it difficult for governments to participate in data sharing and evidence building even when useful tools or infrastructure are available. Staff who are stretched thin may not have time to search through long guidance documents, attend extensive training, or build new internal workflows before using NSDS.

The needs and gaps analysis also highlighted the importance of preserving knowledge across staff. Capacity building cannot rely on training one person at one point in time. If only one or two staff members hold certain knowledge, organizations can lose capacity when those staff leave, change roles, or become unavailable. Reusable documentation, templates, and internal guidance can help agencies share knowledge across staff and maintain continuity.

[2] Official languages for U.S. territories include Samoan and English in American Samoa; English and Chamorro in Guam; English, Chamorro, and Carolinian in the Northern Mariana Islands; Spanish and English in Puerto Rico; and English in the U.S. Virgin Islands. These designations do not capture all Indigenous, local, heritage, or immigrant languages used across the territories, which should also be considered in language access planning.

This recommendation focuses on two related needs. First, users with limited time need short, plain-language supports that can quickly orient them to a task. Second, organizations need reusable documentation and materials so knowledge can be shared across staff and preserved when people change roles or leave. Together, these supports can help users continue to benefit from NSDS even when capacity is limited.

Recommended Steps for the NSDS

Provide lightweight implementation support for users with limited staff time or specialized expertise. NSDS should include support for users who cannot dedicate substantial time to learning a new system or managing complex data processes. Lightweight implementation support should focus on what users need to do next, rather than providing users with comprehensive background information.

This support should also reduce points of friction. If users must navigate multiple log-ins, interpret highly technical documentation, or read extensive materials before taking a first step, the NSDS may become another system they must learn and maintain. For users with limited staff time, even small barriers can prevent use.

NSDS could provide short guides, quick-start checklists, plain-language instructions, recorded demonstrations, and examples that show common tasks from start to finish. These materials should be integrated with tools users already have and should not assume that users can adopt entirely new workflows before participating.

For example, a small city, program office, or agency team may need help identifying a relevant data set, understanding whether data are appropriate for a question, or figuring out what information is needed for an access request. Those users may not have legal, privacy, or other specific department staff available to support every step. NSDS scaffolding should help them understand the minimum first steps, what information to gather, and when they may need additional support.

Make knowledge reusable inside organizations. NSDS should help agencies reduce reliance on one or two staff members who hold critical knowledge about data systems, agreements, or access processes. The relevant knowledge will often live inside a specific agency, not the NSDS. The role of the NSDS should therefore be to provide guidance, templates, and examples that agencies can adapt and store internally.

This support should help staff within the same agency share knowledge more consistently. It should also help new staff learn NSDS-related processes more quickly. For example, NSDS could provide templates that agencies use to document internal contacts, approval roles, data set caveats, use restrictions, and common workflow steps. Agencies could then adapt those templates to their own context and maintain them locally.

Reusable materials could include role-based checklists, workflow templates, frequently asked questions, example metadata, short reference guides, and internal onboarding packets. In this example, the goal is for the NSDS to make it easier for agencies to preserve and share their own knowledge across staff.

This support is especially important for organizations that may not have backup staff for key data, legal, privacy, or technical roles. Better documentation and reusable internal materials can reduce repeated one-

on-one explanations, support staff transitions, and help agencies apply NSDS processes more consistently over time.

F. Recommendation 6: Demonstrate value and reduce burden through priority use-case pathways

This recommendation calls for NSDS to focus on a limited set of priority measurable use-case pathways that demonstrate clear value, reduce burden, and show how the NSDS can be used to answer meaningful cross-system questions. These pathways could focus on topics such as linking education and workforce data to understand long-term outcomes, using unemployment insurance data to identify reemployment service gaps, or connecting housing and assistance data to support efforts to prevent eviction and stabilize housing. Use-case pathways expand on the user journeys in Recommendation 1 by showing how NSDS can help users complete specific data tasks more efficiently and with less burden than current approaches.

Structured conversation findings consistently show that stakeholders are motivated to engage with data systems when they see concrete, relevant applications rather than abstract capabilities. At the same time, adoption is constrained by limited capacity, unclear value propositions, and the burden of navigating complex data-sharing processes. By organizing efforts around measurable use cases, NSDS can make its value more visible, align stakeholders, and reduce duplication by creating repeatable pathways for common types of analysis and decision making.

Priority use cases should be selected and implemented in ways that reflect variation across contexts. Local entities and smaller organizations will benefit most from clearly defined, low-burden pathways and examples that demonstrate practical application without requiring extensive technical capacity. For U.S. and Tribal governments, use cases should be developed in partnership, reflecting local priorities, governance structures, and data-sovereignty considerations.

Findings from the needs and gaps report indicate that government users want to use data for evaluation, but many systems were designed for compliance reporting or program administration rather than learning. Findings point to the need for end-to-end use-case pathways that show how users move from a policy question to usable outputs.

This recommendation also addresses the risk that NSDS capabilities could be technically strong but underused. If users cannot see how NSDS fits into their work, they may be less likely to invest the staff time, coordination, and governance effort required to participate. Clear priority use-case pathways can make the value of NSDS more visible by showing how its services support practical government questions and reduce recurring burdens.

Recommended Steps for the NSDS

Select priority use cases and develop them into measurable case studies. NSDS should select a small number of priority use cases and develop them into measurable case studies that show where the service adds value. Priority use cases should address meaningful cross-system questions, be relevant to user decisions, and offer lessons that could apply across more than one agency, jurisdiction, or user group. They should also be feasible enough to implement and concrete enough to measure.

Each case study should begin with a real policy, program, research, or service-delivery question and show how NSDS could help users move from that question to relevant data, access steps, analysis, outputs, and potential decisions. A strong case study should present clearly the question the user is trying to answer, the data or partners needed, barriers the user would likely face without NSDS, the support the NSDS could provide, and what could change because of that support.

Before developing each case study, NSDS should define what success would look like. Success could include reducing the steps needed to identify relevant data, shortening the time required to understand access requirements, increasing reuse of documentation, clarifying governance roles, or producing outputs that users can apply to a decision. Case studies should also demonstrate value for different types of users, including data users, data providers, program staff, technical staff, and decision makers.

Develop standardized use-case "pathways" that can be reused. For each priority use case, NSDS should include a standardized pathway that documents the process from the initial question to the resulting output or decision. These pathways should show how users move through the major steps of discovery, access, governance, documentation, analysis, and application.

Each pathway should identify the question that prompted the work, the relevant data sources and partners, the common data elements and definitions involved, the access and approval steps required, the governance or stewardship decisions made, the analytic approach used, the outputs produced, and how those outputs could support a decision or action. Where possible, pathways should also identify points where NSDS reduces burden compared with current approaches.

These pathways should be reusable but flexible. NSDS should document which parts of the pathway are likely to be broadly applicable and which parts may require adaptation based on jurisdiction, data sensitivity, legal authority, governance structure, or user capacity. This would support users' understanding of what they can borrow directly and what they may need to modify.

Pair use cases with practical tools, guidance, and examples. Each priority pathway should include practical resources that help users understand and apply the pathway. These resources should support technical and nontechnical users and be written in plain language where possible.

Supporting materials could include a short overview of the use case, a description of the data sources involved, a plain-language explanation of the governance and access steps, documentation and data dictionaries tailored to the pathway, templates or checklists for common tasks, and guidance on how similar users could adapt the pathway These materials should reduce the need for users to recreate the process from scratch.

The materials should demonstrate what is possible and how to get there. They should extend beyond describing NSDS capabilities in general terms. Users should be able to see the question, the data, the steps, the supports, the output, and the decision or improvement the pathway is intended to inform.

G. Recommendation 7: Publish operations, sustainability, and continuous improvement plans

We recommend that the NSDS publish clear plans that define how the system will operate, how it will be sustained over time, how outcomes will be measured, and how it will evolve based on user needs and experience. These plans are important because engagement and adoption will depend not only on the quality of the tools and services NSDS offers, but also on whether users and partners trust that the system will be reliable, accountable, and sustainable over time.

Stakeholders emphasized that NSDS must demonstrate value in a transparent and measurable way rather than relying on assumptions about its impact. State, local, territorial, and Tribal partners are unlikely to invest time, resources, and organizational effort into engaging with the NSDS if its long-term role, funding, maintenance, and support model are unclear. Federal agencies may also be hesitant to align workflows, contribute metadata, participate in shared infrastructure, or rely on NSDS without clarity about governance, accountability, and sustainability. Tribal governments will need clarity about how operations, accountability, feedback, and system changes will respect Tribal sovereignty, Indigenous Data Sovereignty, consent, stewardship, and government-to-government relationships.

Clear plans that define outcomes, track progress, and address sustainability are therefore critical to building accountability, trust, and sustained participation. These plans can help users and partners understand what NSDS is trying to achieve, how success will be measured, how feedback will be used, and how the service will adapt as user needs, technologies, data assets, and policy contexts change.

This recommendation addresses limited visibility into whether NSDS is reducing burden for users and agencies. Because burden reduction is one of the central goals of NSDS, the system should be able to demonstrate whether it is reducing the time, effort, duplication, or uncertainty associated with data discovery, access, governance, linkage, and analysis. Users and partners will need more than a general statement that NSDS is intended to reduce burden. They will need evidence that NSDS is making specific processes easier, faster, more understandable, or more reusable.

In addition, this recommendation addresses the risk that NSDS capabilities may become misaligned with user needs over time. Data systems, technologies, legal requirements, agency priorities, and user expectations will continue to change. NSDS will need a structured approach for learning from user experience and adapting its services, tools, guidance, and governance processes accordingly.

This recommendation also addresses partner hesitation to engage with systems that may not be maintained or supported over time. Many state, local, territorial, and Tribal governments have limited staff capacity and must make careful decisions about where to invest time and organizational attention. If NSDS is perceived as a short-term pilot, temporary platform, or uncertain federal initiative, potential users may be less likely to participate. A clear sustainability plan can help address this concern by explaining how NSDS will be supported beyond initial development.

These plans need not be combined into a single document. They could be presented through a set of coordinated plans, public-facing summaries, technical documentation, governance materials, and periodic

updates. What matters is that they collectively provide clear and transparent guidance to users and partners and are updated as the NSDS evolves.

Recommended Steps for the NSDS

Define intended outcomes and success measures. A clear statement of intended outcomes and success measures should explain what NSDS is designed to achieve and how progress will be tracked and reported. Outcomes should reflect the core goals of NSDS, including improving data discovery and access, reducing agency and user burden, supporting responsible data linkage and analysis, strengthening capacity, and increasing user trust and satisfaction.

Success measures should include both system-level and user-centered indicators. System-level measures could include the number and types of data assets discoverable through NSDS, the number of agencies or partners participating, the use of shared infrastructure, the number of completed data access or linkage pathways, and the timeliness of support. User-centered measures could include user satisfaction, time to identify relevant data, time to navigate access requirements, reduction in duplicative requests or agreements, successful escalations to human support, and whether users report that NSDS helped them answer practical questions.

Measure burden reduction and value. NSDS should develop a transparent approach for measuring whether it is reducing burden and delivering value. This could include tracking how long it takes users to find data, understand documentation, identify the right contact or approval pathway, complete access steps, or receive support. It may also involve examining whether, over time, improvements and expansion of NSDS capacity-building efforts are reducing burden and time investments—for example, tracking whether additional resources, such as reusable templates, user pathways, governance tools, and priority use-case pathways, reduce the need for bespoke or duplicative processes.

NSDS should also communicate value in ways that are meaningful to different users. For federal agencies, value may include reduced duplicative infrastructure, shared services, improved documentation, and more consistent access pathways. For state and local governments, value may include easier navigation of federal data, practical support for cross-agency questions, reduced administrative burden, and clearer pathways from data to decisions. For U.S. territories and Tribal governments, value should include whether NSDS supports their priorities, respects governance and stewardship needs, and provides benefits that justify participation.

Publish an approach to monitoring, learning, and feedback. NSDS should develop and publish a plan that explains how user feedback and usage data will inform improvements over time. This should include how NSDS will collect feedback (ideally through multiple methods), who will review it, how often it will be assessed, and how users will know whether their feedback leads to changes. Feedback mechanisms should include passive and active approaches, such as in-platform feedback, help desk and concierge data, user interviews, listening sessions, advisory groups, and structured engagement with state, local, territorial, and Tribal partners. When possible, NSDS will have to engage with stakeholders who are not using it to continuously assess barriers to use and improve access.

NSDS should ensure that its approach identifies recurring pain points across the user experience. For example, repeated questions about access requirements, unclear metadata, failed searches, high rates of

escalation, or unresolved governance questions may indicate areas where documentation, AI tools, human support, or underlying workflows need improvement. Monitoring should therefore be used not only to evaluate performance, but also to improve the NSDS.

Develop and publish a plan for long-term operations and sustainability. NSDS should publish information about how the system will be funded, maintained, staffed, governed, and supported beyond initial development. This does not require every operational detail to be finalized before launch, but users and partners should have enough information to understand the likely path from demonstration to sustained service.

The sustainability plan should address how NSDS will maintain core functions over time, including discovery and navigation tools, AI-enabled support, human support, capacity-building resources, secure access and linkage infrastructure, documentation, governance support, and user engagement. It should also address how NSDS will maintain and update metadata, guidance, templates, standards resources, training materials, and other shared supports that could become outdated if not actively maintained.

Clarify governance and accountability in NSDS operations. NSDS should describe roles, responsibilities, and decision-making processes for ongoing operations. This should include who is responsible for maintaining different NSDS components, how priorities will be set, how changes will be approved, how risks will be managed, and how users and partners will have input into future decisions.

Accountability should extend to both AI-enabled tools and human support functions. NSDS should clarify how AI outputs will be monitored, how errors or outdated information will be corrected, how users can escalate concerns, and how human review will be incorporated for complex or high-risk issues. For governance-sensitive contexts, including Tribal and territorial engagement, accountability mechanisms should reflect the need for relationship-based engagement and appropriate stewardship.

Build in structured iteration and adaptation. NSDS should define how the system will evolve in response to changing needs, technologies, and use cases. This could include a regular review or change-control process through which the NSDS assesses user feedback, updates service offerings, revises documentation, improves AI tools, adds or retires resources, and adjusts implementation priorities. This process should be transparent enough that users and partners understand how NSDS will continue to improve after initial launch.

Iteration should also be tied to priority use cases. As NSDS tests and refines use-case pathways, it should document what worked, where users encountered barriers, what supports reduced burden, and what changes are needed before scaling. This learning should inform both the implementation roadmap and longer-term operations.

NSDS should avoid assuming that publishing plans once will be sufficient. Communication about operations, sustainability, and continuous improvement should be ongoing, accessible, and tailored to different audiences. Users should be able to understand not only what NSDS offers, but also how it is changing, how decisions are being made, and how their feedback can shape future improvements.

V. Recommendations Specific to U.S. Territories

A. Recommendation 8: Develop a structured plan and process for meaningful engagement of U.S. territories in NSDS design, implementation, and continuous improvement

We recommend that NSDS establish a deliberate, sustained approach to engaging U.S. territories, including structured mechanisms for input, relationship-building, and partnership over time. This engagement should be designed specifically for U.S. territories rather than relying only on general engagement processes that may primarily reflect federal, state, or local government contexts. U.S. territories differ significantly from each other in governance structures, population size, infrastructure, language, geography, and data capacity. Engagement approaches should therefore be flexible rather than standardized and should respect territorial priorities and data stewardship practices rather than assuming alignment with federal or state models.

This recommendation addresses the need for focused territorial engagement so the NSDS can better understand territorial data priorities, federal data gaps, infrastructure realities, governance structures, language access needs, staffing constraints, and capacity limitations. U.S. territories may have different relationships with federal statistical systems than states, and their data needs may not be well understood if engagement processes are based on assumptions about state or federal agencies. A structured engagement process would also help territorial partners understand how NSDS could support their priorities, where participation may require additional support or coordination, and how territorial input will be considered as the NSDS evolves.

Project outreach efforts for this study also underscored the practical challenges of engaging U.S. territories through standard engagement approaches. Time zone differences, geographic dispersion, scheduling constraints, limited staff capacity, and variation across territories in governance structures, language, infrastructure, and local context can make synchronous or one-size-fits-all engagement difficult. These challenges suggest that NSDS should use flexible, sustained, and lower-burden engagement approaches that are designed with territorial availability, priorities, and capacity in mind, rather than assuming that broader federal, state, or local engagement processes will be sufficient.

Meaningful engagement requires more than one-time consultation. It requires ongoing relationships, contextual understanding, and shared ownership, so that NSDS reflects the priorities, constraints, and governance structures of territorial partners. A structured engagement process would help NSDS better understand territorial priorities, operational constraints, data stewardship practices, infrastructure realities, and governance structures. It would also help territorial partners understand how NSDS could support their needs and where participation may require additional support, coordination, or capacity building.

Recommended steps for the NSDS

Identify consistent points of contact for territorial partners to support ongoing partnerships. NSDS should consider partnership-oriented models, such as assigning specific NSDS staff to work closely with territorial partners over time. Consistent points of contact could help reduce burden on territorial

governments, support continuity, and build institutional knowledge within NSDS about each territory's governance structure, priorities, data infrastructure, and capacity constraints.

Establish dedicated, flexible, and relationship-based engagement approaches. NSDS should engage territorial governments directly and consistently, rather than relying only on written feedback requests, broad public comment opportunities, or general data user meetings. Where feasible, in-person engagement or government visits could help to build trust, better understand local contexts, and demonstrate that the NSDS is committed to meaningful partnership.

In addition, NSDS should create a structured mechanism for ongoing territorial input, such as an ongoing advisory group or committee focused on U.S. territory perspectives. This mechanism should provide regular opportunities for territorial governments to share priorities, identify barriers, review emerging NSDS tools or user journeys, and flag implementation concerns before decisions are finalized. Because U.S. territories are geographically dispersed and differ in culture, language, governance, infrastructure, and capacity, NSDS should offer multiple engagement formats, including asynchronous input opportunities, virtual meetings at feasible times, written follow-up, and in-person engagement where appropriate and feasible.

At the same time, direct synchronous engagement may not always be feasible or practical for territorial partners because of time zone differences, geographic distance, scheduling constraints, competing demands, and limited staff capacity. In these cases, NSDS should use a focused survey as one way to gather input from U.S. territories, especially where prior outreach methods have not produced sufficient participation or where synchronous engagement is difficult. A survey could provide an asynchronous, lower-burden way to ask territorial partners about priority data needs, barriers to using federal data, infrastructure and staffing constraints, preferred engagement formats, language access needs, relevant agencies or offices to involve, and the types of NSDS support that would be most useful. The survey should not replace relationship-based engagement, but it could provide a lower-burden starting point for identifying priorities and tailoring follow-up conversations.

Seek early and continuous territorial involvement in design and implementation decisions. Territorial engagement should begin before key decisions are finalized and continue throughout implementation. NSDS should invite territorial input on user journeys, discovery and navigation tools, data access supports, metadata and documentation expectations, governance processes, training and technical assistance, and other service components that may affect territorial participation or use.

Create clear pathways for integrating territorial input into NSDS decisions. NSDS should specify how territorial input will be documented, reviewed, prioritized, and incorporated into system development, priorities, and governance. This could include tracking themes from territorial engagement, reporting on how feedback was used, identifying issues that require follow-up, and explaining when NSDS cannot address a concern directly but may need to coordinate with other federal partners. Maintaining a record of territorial input, follow-up actions, decisions, and outstanding issues could support continuity, reduce repeated requests for the same information, and help demonstrate that engagement is informing NSDS implementation over time.

VI. Tribal-Specific Recommendations

The recommendations in this section are intended to complement the broader NSDS recommendations presented earlier in the report by addressing considerations that are unique to Tribal governments and Tribal participation in NSDS. While many of the needs identified by Tribal participants overlap with those identified by state, local, and territorial governments—including needs related to data access, governance, workforce capacity, infrastructure, funding, and evidence building—the Tribal findings consistently emphasized that these issues are shaped by Tribal sovereignty, Indigenous Data Sovereignty, Indigenous Data Governance, federal trust and treaty responsibilities, and government-to-government relationships.

Several recommendations in the previous section apply broadly to Tribal governments, particularly Recommendation 1 on clarifying the functional range of the NSDS and differentiated user journeys. That recommendation includes important guidance on developing Tribal-specific user journeys, articulating a Tribal value proposition, and demonstrating how NSDS supports Tribal priorities, governance, stewardship, and self-determination.

The Tribal-specific recommendations focus on areas that warrant additional consideration or more specific actions to support Tribal participation in NSDS. Collectively, they emphasize the importance of institutionalizing Tribal consultation and engagement, embedding Tribal governance and decision-making authority into NSDS processes, and improving Tribal access to high-quality, appropriately governed data through trusted and sustainable data-sharing pathways. The goal of these recommendations is not simply to increase Tribal participation in NSDS, but to ensure that participation occurs in ways that recognize Tribal sovereignty, support self-determination, and create value for Tribal governments and Tribal communities.

A. Recommendation 9: Institutionalize a meaningful Tribal consultation process and ongoing engagement throughout NSDS design, implementation, governance, and future system changes

NSDS should establish a structured, long-term approach to Tribal consultation and Urban confer that extends across planning, implementation, governance, operations, and future system changes. Tribal consultation refers to the formal government-to-government process through which federal agencies seek timely and meaningful input from federally recognized Tribal Nations on policies, actions, or decisions that may have Tribal implications (Executive Office of the President 2000, 2021). Consultation is a distinct federal responsibility that differs from broader engagement activities. While consultation is an essential component of the federal–Tribal relationship, it is not sufficient on its own to support an evolving system such as the NSDS. NSDS will also require ongoing engagement mechanisms that facilitate collaboration, technical exchange, relationship-building, and continuous feedback throughout the system life cycle. Additionally, since most American Indians/Alaska Natives (AI/ANs) reside off reservation in cities, Urban confers should be held to ensure that the needs of urban-dwelling AI/ANs are represented.

This recommendation focuses on how Tribal Nations might participate in the NSDS throughout planning, implementation, governance, operations, and future system changes. Meaningful Tribal participation is essential because NSDS decisions may affect Tribal access to data, participation in data-sharing activities, governance of Tribal information, and the design of services intended to support Tribal users. Embedding

consultation and engagement throughout the NSDS life cycle can help ensure that services, governance processes, and implementation approaches reflect Tribal priorities, governance requirements, operational realities, and diverse community contexts while strengthening trust, transparency, and long-term relationships.

Tribal findings consistently emphasized that meaningful engagement requires ongoing participation rather than one-time consultation. Across structured conversations, consultations, conferences, and the literature, Tribal leaders repeatedly described situations in which Tribal input was sought after key decisions had already been made or through processes that did not provide meaningful opportunities to influence outcomes. These experiences reinforced the importance of engaging Tribal Nations early and throughout system development rather than at isolated points in time.

Participants also emphasized that consultation should not be viewed solely as a procedural requirement or information-gathering exercise. Rather, it should be part of an ongoing government-to-government relationship supported by broader engagement mechanisms that foster collaboration, transparency, accountability, and shared problem solving. Findings further suggested that sustained engagement can improve mutual understanding of Tribal governance structures, sovereignty considerations, and community priorities while creating opportunities to identify emerging issues and adapt the NSDS as Tribal needs evolve.

Additionally, meaningful engagement of Tribes requires communicating information in a way that is transparent and accessible, tailored to Tribal needs and contexts, and respectful of Tribes' time and resource capacity. Findings show widespread concerns about the abstract, opaque nature of the NSDS's structure and functions. This includes lack of clear definitions around the types of data that users will have access to, the NSDS's role in collecting and creating new data, and the usage of AI-based technologies. Several participants expressed apprehension regarding the usefulness of the NSDS to Tribes and whether the NSDS can improve Tribal data capacity while protecting Tribal sovereignty, given past and current barriers to Tribal data access and ownership (which are described in detail in the Needs and Gaps report).

Recommended Steps for the NSDS

Develop and publish a Tribal consultation and engagement framework. A Tribal consultation and engagement framework should describe how Tribal Nations will be involved throughout NSDS planning, implementation, governance, operations, and future system changes. The framework should make clear that formal Tribal consultation is distinct from general stakeholder engagement while recognizing that consultation alone is not sufficient for a system that will evolve over time. NSDS should use the framework to establish predictable, transparent, and repeatable processes for Tribal participation before major decisions are finalized. The framework should also recognize the diversity of Tribal governments and organizations that may interact with NSDS, including federally recognized Tribes, state-recognized Tribes, Urban Indian Organizations, Alaska Native entities, Intertribal consortia, and Tribal-serving organizations where appropriate.

> "The fact that this is so hard to understand… is problematic. I think there needs to be a clear elevator speech and a graphic abstract…Further, based on Indigenous methodologies, how is this helpful to Tribes? That explanation and use needs to be crystal clear."
>
> Tribal Expert Panel member

Identify consistent points of contact for Tribal partners. Dedicated staff or liaisons could help Tribal governments understand how to engage with NSDS, identify relevant services, raise concerns, and follow up on prior input. Consistent points of contact would also help NSDS build institutional knowledge about Tribal priorities, governance expectations, data access needs, and implementation barriers over time.

Define different approaches to Tribal engagement. Some NSDS activities may require formal government-to-government consultation, particularly when policies, governance structures, data-sharing pathways, or system changes may affect Tribal Nations. Other activities may require Tribal governance review, technical engagement, user testing, or information sharing. Defining these approaches would help NSDS avoid treating all engagement as the same and would clarify when Tribal leaders, Tribal data staff, subject matter experts, Tribal organizations, or other partners should be involved. NSDS should also use multiple engagement formats, including written input, listening sessions, and technical office hours when appropriate.

Communicate clearly the purpose, structure, and functions of the NSDS: As noted in earlier recommendations, this includes defining the types of data that users will have access to (e.g., federal, state, Tribal), whether the NSDS will create new pathways of data collection, and how AI tools will be used, especially with regards to Tribal-specific data. The NSDS should develop and disseminate plain-language explanations and graphics that are accessible to audiences of all technical backgrounds. Additionally, as much as possible, these materials should be tailored to Tribal communities and reflect their local needs and priorities.

Seek meaningful Tribal input before decisions are finalized. The framework should identify decision points that require Tribal engagement before NSDS moves forward. These decision points could include the creation of new services that may affect Tribal users, new data-sharing capabilities involving Tribal data, changes to governance policies, development of metadata or data standards that affect Tribal data, partnerships involving federal or state-held Tribal data, or use cases involving Tribal citizens, communities, lands, or resources. Identifying these decision points in advance would help ensure that Tribal input is sought early enough to shape the design of the NSDS rather than only after major decisions have been made.

Establish a clear consultation and engagement life cycle. Tribal governments are frequently asked to respond to multiple federal initiatives with limited staff and time. For formal consultation and major engagement activities, NSDS should provide ample advance notice, plain-language background materials, sufficient time for Tribal review, opportunities for discussion, documentation of input received, and follow-up communication describing how Tribal input was considered. This life cycle should include a process for identifying which issues require additional consultation, which can be addressed through technical engagement, and which require coordination with other federal, state, or Tribal partners.

Demonstrate how Tribal input has influenced decisions. The framework should include mechanisms for reporting back to Tribal Nations. NSDS should document the input received from Tribal consultations and engagement activities, identify themes, track follow-up actions, and explain how Tribal input influenced decisions. When the NSDS is unable to adopt a recommendation, it should explain why and identify whether the issue will be revisited, referred to another entity, or addressed through a different mechanism. This feedback loop is important for building trust and demonstrating that engagement is not

simply a listening exercise. The framework should include an engagement record and accountability process. NSDS should maintain internal records of Tribal engagement activities, input received, commitments made, decisions taken, and outstanding issues. These records could support continuity across staff transitions, help prevent repeated requests for the same information, and provide a basis for periodic review of whether the NSDS is following through on Tribal engagement commitments.

Build Tribal input into design, testing, and implementation. NSDS should invite Tribal governments and Tribal data practitioners to review user journeys, discovery tools, metadata approaches, access request workflows, governance documentation, technical assistance materials, and pilot services before they are finalized. This would help the service identify usability issues, governance concerns, burden, or unintended consequences early in the process.

Support national, regional, and direct Tribal engagement. Some issues may require broad national consultation with Tribal Nations. Others may be better addressed through regional engagement, engagement with specific Tribal Nations affected by a particular data set or use case, or engagement with Tribal organizations that have subject matter expertise. NSDS should avoid assuming that one Tribe, one organization, or one engagement forum can speak for all Tribal Nations.

Periodically review and revise the framework with Tribal input. As NSDS matures, new issues will emerge related to data access, governance, privacy, stewardship, technology, and coordination. NSDS should build in a process for assessing whether consultation and engagement mechanisms are working as intended and for updating the framework based on Tribal feedback and experience.

B. Recommendation 10: Embed Tribal governance, review, stewardship, sovereignty, and decision-making authority into NSDS processes

NSDS should incorporate governance structures and processes that recognize and support Tribal authority over data concerning Tribal citizens, communities, lands, and resources. While consultation and engagement are essential, meaningful Tribal participation requires more than opportunities to provide input. Tribes should have clearly defined roles in governance, stewardship, review, and decision-making processes that affect Tribal data and Tribal participation in NSDS.

This recommendation focuses on how Tribal authority would be operationalized within the NSDS. Indigenous Data Sovereignty and Indigenous Data Governance recognize Tribal authority to determine how data are collected, accessed, shared, interpreted, used, stewarded, and governed throughout the data life cycle (Garba et al. 2023; Rainie et al. 2017; Rodriguez-Lonebear 2016; Russo-Carroll et al. 2020, 2021). Findings from consultations, structured conversations, conferences, and the literature consistently described Tribal authority over data as a core component of sovereignty and self-determination. Governance structures that recognize Tribal authority can help ensure that the NSDS supports Tribal priorities, protects Tribal interests, improves accountability, and reduces the risk of inappropriate use, interpretation, or dissemination of Tribal information. Findings also suggest that without clearly defined governance structures and meaningful Tribal decision-making authority, Tribal governments may have limited confidence that NSDS will respect Tribal sovereignty, stewardship expectations, and community priorities, reducing trust—and willingness to participate—in the system.

Findings suggest that existing governance structures often place Tribes in advisory or reactive roles rather than providing meaningful opportunities to shape decisions about data governance, stewardship, access, sharing, interpretation, and use. Tribal leaders repeatedly described situations in which data systems, standards, policies, and data-sharing arrangements were designed without sufficient Tribal involvement or without mechanisms that recognize Tribal authority over data concerning Tribal citizens and communities.

Participants also expressed concerns regarding unclear ownership, inconsistent governance expectations, conflicting interpretations of law and policy, and uncertainty regarding who has authority to make decisions about Tribal data. Existing federal, state, and institutional governance processes do not consistently recognize Indigenous Data Sovereignty and Indigenous Data Governance principles or provide clear pathways for incorporating Tribal governance requirements into broader data-sharing environments. As NSDS components may involve Tribal participation, data access, data sharing, or governance coordination, governance structures will be needed to ensure that Tribal authority, stewardship expectations, and decision-making roles are recognized and applied consistently.

Recommended Steps for the NSDS

Establish a Tribal governance structure within the NSDS. NSDS should create a standing Tribal governance body responsible for advising on policies, governance approaches, stewardship requirements, and strategic decisions affecting Tribal participation and Tribal data. The Tribal governance body should play an active role in ensuring Tribal data sovereignty principles are embedded within the NSDS structure and should be engaged prior to the development of systems and processes. This body could include representatives from Tribal governments, Tribal organizations, Urban Indian Organizations, Tribal Epidemiology Centers, Tribal Institutional Review Boards, Indigenous Data Governance experts, and other Tribal data practitioners. The governance structure could also include specialized subgroups or working groups focused on topics such as governance and policy, data sharing and access, metadata and standards, privacy and security, public health, research and evidence building, emerging technologies, and AI.

Define governance roles, responsibilities, and decision-making authorities. NSDS should clearly document the roles of Tribal governments, federal agencies, state partners, NSDS operators, and other participants in governance processes. Governance documentation should identify who is responsible for decisions regarding access, sharing, stewardship, interpretation, publication, dispute resolution, and ongoing oversight of Tribal data and Tribal participation.

Develop a policy that governs the appropriate uses of AI for handling Tribal specific data. Given Tribal concerns around data privacy, bias, misrepresentation, and unauthorized use of sensitive cultural information, the NSDS should engage with the Tribal governance body as well as Tribal data and digital sovereignty experts on appropriate use of AI to handle Tribal specific data within the NSDS. Those engagements should lead to a formal policy around AI use of Tribal data which should be revised and updated as the technology evolves.

Clarify the relationship between the NSDS and existing Tribal engagement and data-sharing processes. NSDS should clearly communicate that participation in NSDS does not replace or supersede existing Tribal consultation requirements, government-to-government relationships, Tribal review

processes, research approvals, or agency-specific data-sharing agreements. Where federal agencies already have established consultation responsibilities or existing agreements with Tribal Nations, NSDS should be designed to complement and support those processes rather than creating parallel or conflicting pathways. NSDS should also identify when requests must continue to follow existing Tribal approval processes and when the service can help facilitate or streamline coordination without changing governance responsibilities.

Develop governance processes that support Tribal authority throughout the data life cycle. Governance processes should allow Tribes to establish conditions regarding data collection, access, sharing, use, interpretation, publication, retention, and reuse. Processes should also recognize that governance requirements may vary across Tribal Nations and that a single governance model may not be appropriate for all Tribes. Tribal Expert Panel members recommended that the NSDS include an opt-in system for each Tribe to determine whether data specific to that Tribe should be included in the NSDS. Additionally, Tribes should be able to withdraw consent for data sharing at any time and for any reason.

Create formal review pathways for Tribal governments. NSDS should establish mechanisms that allow Tribal governments to review and provide input on data sets, metadata, indicators, analyses, publications, data products, standards, and services involving Tribal data or Tribal populations. Review pathways should be designed to occur early enough to influence outcomes rather than only after products have been finalized.

"You just cannot make inferences to tribes without first talking directly with the tribes themselves…that puts the ethics in the hands of the researcher, which makes tribes quite nervous. There needs to be some kind of consequences tied to that if they violate it."

Tribal data expert

Develop model governance, stewardship, and data-sharing agreements. NSDS should create model agreements that Tribal Nations and other partners can adapt to their own governance requirements. These agreements could address topics such as access permissions, stewardship responsibilities, approved uses, publication review, data retention, confidentiality protections, metadata requirements, and dispute resolution processes. Standardized templates may reduce administrative burden while still allowing flexibility for Tribal-specific requirements.

Ensure governance requirements are documented within NSDS systems and processes. Governance requirements should be incorporated into metadata, documentation, access procedures, and data management workflows. Information regarding approved uses, access restrictions, stewardship expectations, review requirements, consent conditions, and governance obligations should remain connected to Tribal data throughout the data life cycle.

Establish mechanisms for resolving governance disputes and conflicts. NSDS should develop procedures for addressing situations in which Tribal, federal, state, or other partners have differing governance expectations. These procedures could include escalation pathways, mediation processes, governance review panels, or other mechanisms for resolving disagreements regarding access, sharing, interpretation, publication, or stewardship.

Periodically evaluate governance structures and processes. Governance needs will evolve as NSDS expands and new technologies, partnerships, and use cases emerge. NSDS should periodically review governance structures, agreements, policies, and review processes with Tribal partners to ensure they remain effective, relevant, and aligned with Tribal priorities.

C. Recommendation 11: Improve Tribal access to high-quality, relevant, and appropriately governed data through trusted data-sharing pathways

NSDS should help Tribal Nations access, discover, understand, and appropriately use data needed to support governance, planning, service delivery, public health, emergency response, research, evaluation, and evidence-building activities. Access should extend beyond simply making data available. Tribal governments should be able to identify relevant data sources, understand what those data contain, assess whether they are appropriate for a specific purpose, and navigate the processes required to obtain and use them.

This recommendation focuses on improving the practical ability of Tribal Nations to obtain and use data while ensuring that Tribal governance requirements, stewardship expectations, privacy considerations, and community priorities remain connected to those data. Findings suggest that many Tribal governments rely on federal, state, local, and other external data sources to support decision making, but often encounter barriers related to access, discoverability, data quality, interoperability, documentation, and governance. Improving access to high-quality, appropriately governed data would strengthen Tribal decision making, evidence building, program administration, resource allocation, and service delivery while reducing barriers that currently limit the value of existing data resources.

Tribal findings consistently emphasized the importance of access to accurate, timely, relevant, and representative data. Across structured conversations, consultations, conferences, and the literature, Tribal participants described data as essential for governance, public health, emergency response, planning, funding applications, service delivery, and advocacy. However, many participants also described challenges accessing data held by federal and state agencies, navigating fragmented systems, identifying relevant data sets, and obtaining information in forms that are useful for Tribal decision making.

Data-quality concerns further complicate access. Findings identified persistent issues related to racial misclassification, aggregation, suppression, inconsistent definitions, small sample sizes, missing Tribal affiliation information, incomplete geographic coverage, and delays in data availability. Tribal participants also emphasized that access to data alone is insufficient when data are disconnected from Tribal context, governance requirements, metadata, provenance information, or documentation describing limitations and appropriate uses.

Intergovernmental coordination challenges were also frequently identified. Tribal access to data often depends on individual relationships, agency-specific practices, or one-off agreements rather than predictable and repeatable processes. As a result, Tribal governments may encounter substantial administrative burden when seeking access to information already collected by federal or state agencies. Improving access therefore requires both technical improvements and governance mechanisms that support trusted, repeatable data-sharing pathways.

Recommended Steps for the NSDS

Develop a tiered system of data management that provides Tribal leaders and authorized users with direct ownership of and access to Tribal-specific data. Using existing models of Tribal data governance such as the D4I (Data for Indigenous Implementations Interventions and Innovation) Tribal Data Repository (TDR) or the Iwi-designed data platform *Te Whata*, the NSDS should integrate custom data management into the design of the platform, ensuring each Tribe controls access to their data. Additionally, Tribal leaders should automatically receive access to Tribal-specific data for governance without undergoing lengthy, expensive, and time-consuming application processes.

Provide standard language and clear communication on how Tribal identifiers differ across datasets. The NSDS should differentiate between data that is collected based on geography (individuals residing on Tribal lands regardless of affiliation) and data that is collected based on Tribal affiliation. Additionally, how Tribal affiliation or AI/AN status is collected and defined should be clearly stated in documentation.

"How do we make a framework that everybody can work within and have a shared set of tools and ways of structuring things that enables us to speak a common language and adapt it for local needs."

Tribal Expert Panel member

Improve data discoverability and navigation. NSDS should help Tribal users identify relevant federal, state, Tribal, and other data sources by providing discovery tools, searchable catalogs, metadata services, and navigation support. Users should be able to begin with a policy, program, service-delivery, governance, or evidence-building question and identify data sources that may help answer that question.

Strengthen metadata, documentation, and provenance information. NSDS should support metadata standards that describe data sources, collection methods, quality considerations, limitations, governance requirements, approved uses, access restrictions, and provenance information. Documentation should help Tribal users determine whether a data set is appropriate for a specific use and understand the context necessary for responsible interpretation.

Ensure Tribal context remains connected to Tribal data. NSDS should support mechanisms that allow Tribal governments to provide contextual information, governance requirements, stewardship expectations, community-defined indicators, interpretive guidance, local contexts labels or notices where appropriate, and other information needed to support responsible use of Tribal data.

Develop trusted and repeatable pathways for data sharing among Tribal, federal, and state partners. NSDS should work with Tribal, federal, and state partners to identify opportunities for establishing more predictable and consistent approaches to data sharing. Efforts should reduce reliance on informal relationships and ad hoc negotiations while recognizing Tribal sovereignty, governance requirements, and stewardship responsibilities.

Develop model agreements and implementation guidance. NSDS should create model data-sharing agreements, data-use agreements, memoranda of understanding, governance templates, and

implementation guidance that Tribal governments and partner agencies can adapt to support common data-sharing scenarios. Standardized approaches may reduce administrative burden while preserving flexibility for Tribal-specific requirements.

Support coordination among Tribal, federal, and state partners. NSDS should facilitate collaboration among entities that hold or manage data relevant to Tribal governments. This may include developing shared guidance, supporting coordination forums, identifying common barriers to access, and promoting consistent approaches to Tribal data-sharing practices across jurisdictions.

Improve state participation in Tribal data-sharing efforts. Because many Tribal data needs involve information held by state agencies, NSDS should encourage state participation by providing guidance, model agreements, technical assistance, and governance approaches that recognize Tribal sovereignty and support more consistent coordination practices.

Identify and demonstrate high-value Tribal use cases. NSDS should work with Tribal partners to identify and pilot use cases involving governance, public health, emergency response, service delivery, resource allocation, and evidence building. Demonstrating practical value can help inform future investments and encourage participation among both Tribal and non-Tribal partners.

VII. Implementation Road Map

This section presents an implementation road map (Exhibit 6) for the 11 recommendations in this report. The road map is intended to help NSDS sequence implementation over time by identifying which actions could begin first, which actions could be expanded or refined over the medium term, and which actions are appropriate for long-term NSDS operations. Sequencing is important because recommendations vary in complexity, readiness, and dependencies. Some actions may begin in the near term by expanding existing NSDS activities, while others require additional testing, engagement, decision making, or sustained implementation.

The road map is organized into three time periods: (1) near term, (2) medium term, and (3) long term. Near-term priorities are actions that the NSDS could begin within the first one or two years to establish the foundation for implementation. Medium-term priorities are actions that could be advanced over three to five years as services, partnerships, governance structures, and user supports become more operational. Long-term priorities are actions that could be institutionalized over five or more years and maintained as part of ongoing NSDS operations. Distinguishing short-, medium-, and long-term actions can help NSDS prioritize early steps and ensure that implementation evolves based on formative user feedback and needs. The top of the road map outlines where the NSDS could be overall in each time period, titled, "Expected overall implementation progress."

The *implementation areas* in the road map are not additional recommendations. They are organizing categories that group related actions across the recommendations to show how they build on one another over time.

Several implementation dependencies cut across the road map. First, Mathematica recommends that NSDS clarify its role and user pathways early because these decisions shape how users understand all other services and supports. Second, we recommend that governance, legal, documentation, and stewardship supports be developed alongside technical tools, not after them, because access, linkage, and reuse depend on clear rules, roles, and documentation. Third, we recommend that AI-enabled tools be implemented with transparency, human escalation, and feedback mechanisms from the beginning, especially for complex, sensitive, or governance-specific questions. Fourth, we recommend that U.S. territory engagement and Tribal consultation and governance begin early enough to shape design and implementation decisions. They should not be used only to collect feedback after decisions are made.

The road map also recognizes that some issues extend beyond the NSDS's direct authority. In those cases, the NSDS may be able to serve as a convener, shared resource, technical support, or coordination mechanism, while other federal, state, local, territorial, or Tribal partners may need to lead policy, funding, legal, or governance changes. As NSDS matures, the road map should be revisited and updated to reflect implementation experience, user feedback, changing needs, and decisions about the long-term role and scope of the service.

Exhibit 6. Implementation road map

Near term: 1–2 years	Medium term: 3–5 years	Long term: 5+ years and ongoing	Related recommendations
Clarify the role, value, and user pathways of the NSDS.			
• Develop a plain-language description of the core functions of the NSDS, including what it does, what it does not do, who it serves, and how users can engage. • Create and test differentiated user journeys for major user groups, including data users, data providers, federal agencies, states, local governments, U.S. territories, Tribal governments, researchers, and other public users. • Identify an initial set of priority use cases that demonstrate clear value and burden reduction.	• Refine user journeys and value propositions based on user testing, early implementation experience, and feedback from federal, state, local, territorial, and Tribal partners. • Expand priority use-case pathways and document how NSDS reduces burden compared with current approaches. • Use these pathways in communications, onboarding, training, and partner engagement.	• Maintain user journeys and value propositions as living materials that evolve with NSDS, including user needs and lessons learned. • Institutionalize a library of priority use-case pathways that show how NSDS supports practical questions, reduces burden, and helps users move from data discovery to usable outputs and decisions.	1, 6
Build governance, legal, stewardship, and documentation supports.			
• Define governance, legal, data-sharing, standards, and documentation support as a core service area of the NSDS. • Identify common pain points for users and agencies and develop initial templates, checklists, model agreement language, access workflows, stewardship guidance; define minimum usable metadata and documentation expectations for recurring access and linkage scenarios. • Clarify where NSDS can provide guidance and coordination and where agency counsel, data stewards, or other decision makers retain authority.	• Test and refine governance and documentation supports through priority use cases and partner engagement. • Establish access to human expertise for complex questions related to governance, laws, privacy, stewardship, and cross-jurisdictional matters. • Develop modular tools and guidance that can be adapted to different agencies, jurisdictions, data-sensitivity levels, and use cases. Begin integrating Tribal governance requirements into relevant NSDS processes.	• Institutionalize governance, legal, stewardship, and documentation supports as sustained NSDS functions. • Maintain and update templates, agreements, guidance, documentation expectations, and governance workflows as laws, technologies, data assets, use cases, and user needs change. • Use ongoing feedback to identify where governance or documentation barriers continue to limit access, linkage, trust, or responsible use.	2, 4, 10, 11

Near term: 1–2 years	Medium term: 3–5 years	Long term: 5+ years and ongoing	Related recommendations
Develop user support, concierge and capacity-building supports.			
• Define tiers of concierge and user support, including AI-enabled navigation, human support, subject matter expert support, and dedicated support channels where needed. • Identify priority user groups or use cases that may require tailored support from the beginning, including U.S. territories and Tribal governments. • Ensure users know when they are interacting with AI, when human support is available, and how to request additional assistance. • Identify common tasks for which users with limited staff time are most likely to need support.	• Establish subject matter expert networks, help desk supports, office hours, peer learning opportunities, and role-specific onboarding pathways. • Use early support data, escalation patterns, and user feedback to improve AI tools, human support, documentation, and training materials. • Develop a small set of plain-language, task-focused resources that help users take the next step without reviewing extensive materials or creating new workflows from scratch. • Develop additional resources that help agencies preserve and share knowledge across staff, such as workflow templates, staff transition checklists, internal onboarding packets, and example documentation.	• Develop and sustain a mature, user-centered support model that routes users based on need, risk, context, and preference. • Maintain capacity-building resources as reusable organizational supports that reduce reliance on one-time training or individual staff knowledge. • Continue improving AI-enabled and human support based on user experience, common points of confusion, unresolved requests, and changes in the NSDS. • Use feedback from users and agencies to identify where additional scaffolding is needed and where existing materials can be simplified.	3, 5
Operationalize interoperability, metadata, data quality, and priority use cases.			
• Identify high-friction areas where inconsistent definitions, standards, metadata, or data-quality issues limit access, interpretation, linkage, or reuse. • Select initial priority use cases that can test interoperability, access, linkage, documentation, governance, and burden reduction in practice.	• Develop and disseminate crosswalks, reusable data harmonization approaches, fit-for-purpose data-quality guidance, and use-case-specific documentation. • Validate interoperability and metadata supports through real-world workflows, not only technical design. • Refine priority use-case pathways based on implementation experience and document common challenges, solutions, and decision points.	• Institutionalize aligned standards, metadata expectations, data-quality practices, and reusable use-case pathways so cross-system data use becomes more routine and less dependent on ad hoc reconciliation. • Maintain and update standards, documentation, and data-quality guidance as data systems, technologies, policy questions, and use cases evolve.	4, 6, 11

Near term: 1–2 years	Medium term: 3–5 years	Long term: 5+ years and ongoing	Related recommendations
Engage U.S. territories through sustained, relationship-based processes.			
• Establish initial engagement structures for U.S. territories and Tribal governments. • For U.S. territories, identify key partners, conduct focused outreach, use surveys where useful, and create consistent points of contact.	• Deepen engagement into ongoing partnership models. • Integrate territorial input into user journeys, governance processes, metadata approaches, support models, technical assistance, priority use cases, and system design decisions.	• Institutionalize sustained territorial engagement, governance, review, and decision-making processes as routine components of NSDS operations. • Continue adapting engagement structures as relationships, data priorities, governance expectations, technologies, and the NSDS evolve. • Ensure territorial perspectives continue to shape system changes, operations, and long-term improvement.	8, 9, 10, 11
Strengthen Tribal participation, governance, and data access through NSDS.			
• Develop a Tribal consultation and engagement framework and establish recurring consultation and engagement mechanisms. • Identify Tribal partners and designate consistent Tribal points of contact. • Design the Tribal governance structure, define governance roles and responsibilities, and develop model governance, stewardship, and data-sharing agreements. • Improve transparency regarding available data resources, discovery services, metadata, documentation, and access pathways. • Identify priority Tribal data sets, data-sharing barriers, and high-value Tribal use cases.	• Integrate Tribal participation throughout planning, governance, implementation, testing, and operations. • Operationalize the Tribal governance structure, governance review processes, and decision-making pathways. • Incorporate governance requirements into metadata, documentation, and data management workflows. • Expand trusted data-sharing pathways for Tribal, federal, and state partners; interoperability, coordination mechanisms; and use-case pilots. • Refine consultation, governance, and data-sharing processes based on implementation experience and Tribal feedback.	• Institutionalize Tribal consultation, governance, stewardship, and data sharing as standing components of NSDS operations. • Maintain and periodically evaluate engagement structures, governance processes, agreements, review pathways, and coordination mechanisms. • Continue improving discoverability, metadata, interoperability, and access supports while expanding sustainable partnerships between Tribal, federal, and state users. • Adapt NSDS governance, services, and support models as Tribal priorities, technologies, legal requirements, and data ecosystems evolve.	9, 10, 11

Near term: 1–2 years	Medium term: 3–5 years	Long term: 5+ years and ongoing	Related recommendations
Sustain, measure, govern, and continuously improve NSDS.			
• Publish initial operations, sustainability, and continuous improvement plans. • Define intended outcomes, success measures, feedback mechanisms, sustainability assumptions, governance roles, accountability processes, and approaches for measuring burden reduction and value. • Establish a baseline for assessing whether the NSDS is improving discovery, access, linkage, governance, capacity, trust, and user experience.	• Refine operations and sustainability plans based on early use, implementation experience, user feedback, and emerging use cases. • Report regularly on progress, update performance measures, improve feedback loops, and clarify how user and partner input is shaping NSDS changes.	• Maintain an ongoing cycle of measurement, reporting, feedback, adaptation, and sustainability planning. • Continue assessing whether NSDS is reducing burden, supporting responsible data use, and delivering value across government contexts. • Regularly report on outcomes progress and achievements, operations shifts, and sustainability as technology, government, and contexts evolve.	7, 1–11

VIII. Conclusion

The NSDS represents an opportunity to strengthen evidence building by making government data more discoverable, usable, secure, and connected across systems while preserving the governance, stewardship, and trust that are fundamental to responsible data use. The recommendations in this report are intended to support that goal by focusing on the implementation choices that will shape whether the future NSDS is understandable, trusted, low-burden, and valuable to the governments and users it is intended to serve.

Across the recommendations, several priorities emerge. NSDS should clearly communicate its role and value, provide practical governance and documentation supports, offer tiered user assistance that includes both AI-enabled and human support, and demonstrate value through priority use cases that reduce burden and address real policy and program questions. NSDS should also plan for sustainability from the beginning by defining outcomes, developing indicators and goals, measuring progress, collecting feedback and implementation data, and communicating how the service will be maintained and improved over time.

The report also emphasizes that implementation and capacity building must account for different government contexts. U.S. territories and Tribal governments require sustained, relationship-based engagement that recognizes their distinct governance contexts, resource constraints, priorities, and relationships with the federal government. For Tribal governments, participation in the NSDS must be grounded in Tribal sovereignty, Indigenous Data Sovereignty, appropriate governance, stewardship, consent, and government-to-government relationships.

Future engagement should also address gaps in the evidence base underlying these recommendations. Because some government contexts and sectors were less represented in the study, continued outreach, user testing, and follow-up research should intentionally include smaller and lower-capacity jurisdictions, U.S. territories, Tribal nations, and sectors that were less visible in the available evidence. This additional input can help test and refine the recommendations as the NSDS evolves.

As the NSDS Demonstration continues, ongoing engagement, evaluation, and continuous improvement will be essential. Implementing these recommendations should include clear measures of progress so that NSDS, its partners, and users can assess whether change is happening, burden is being reduced, capacity is being strengthened, and the service is becoming more useful and trusted over time.

Ultimately, NSDS will be most effective if it is developed not only as a technical platform, but as a shared service, governance support, capacity-building resource, and long-term partner in responsible data use. Long-term success will depend on trusted partnerships, clear governance, sustained collaboration, and continued responsiveness to the people, organizations, and communities that rely on government data to inform decisions and build evidence.

References

Advisory Committee on Data for Evidence Building. 2022. *Advisory Committee on Data for Evidence Building: Year 2 Report.* October 14, 2022.

Executive Office of the President. 2000. "Executive Order 13175 of November 6, 2000: Consultation and Coordination With Indian Tribal Governments." *Federal Register* 65, no. 218: 67249–67252. Published November 9, 2000.

Executive Office of the President. 2021. "Memorandum on Tribal Consultation and Strengthening Nation-to-Nation Relationships." *Federal Register* 86, no. 18: 7491–7492. Published January 29, 2021.

Garba, Ibrahim, Rogena Sterling, Rebecca Plevel, William Carson, Felina M. Cordova-Marks, Jewel Cummins, et al. 2023. "Indigenous Peoples and Research: Self-Determination in Research Governance." *Frontiers in Research Metrics and Analytics* 8:1272318. https://doi.org/10.3389/frma.2023.1272318.

Milless, Katlyn Lee, Diana Gates, Kamillah Smith, Raquel Whitt, Kathleen Feeney, Lauren Tingey, Stephen Wyatt, Jeannie Le, and Samina Sattar. 2026. *Building Capacity for a National Secure Data Service: Needs, Gaps, and Considerations for State, Local, Territorial, and Tribal Governments.* Alexandria, VA: U.S. National Center for Science and Engineering Statistics, U.S. National Science Foundation.

Rainie, Stephanie Carroll, Jennifer Lee Schultz, Eileen Briggs, Patricia Riggs, and Nancy Lynn Palmanteer-Holder. 2017. "Data as a Strategic Resource: Self-Determination, Governance, and the Data Challenge for Indigenous Nations in the United States." *The International Indigenous Policy Journal* 8(2):1–29. https://doi.org/10.18584/iipj.2017.8.2.1.

Rodriguez-Lonebear, Desi. 2016. "Building a Data Revolution in Indian Country." Pp. 253–272 in *Indigenous Data Sovereignty: Toward an Agenda*, edited by T. Kukutai and J. Taylor. CAEPR Research Monograph No. 38. Acton, Australia: ANU Press. https://doi.org/10.22459/CAEPR38.11.2016.14.

Russo-Carroll, Stephanie, Ibrahim Garba, Oscar L. Figueroa-Rodríguez, Jarita Holbrook, Raymond Lovett, Simeon Materechera, et al. 2020. "The CARE Principles for Indigenous Data Governance." *Data Science Journal* 19(1):43. https://doi.org/10.5334/dsj-2020-043.

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