GEOGOV SUMMIT

10–12 SEPTEMBER, 2024

THE WESTIN WASHINGTON DULLES AIRPORT

CONFERENCE REPORT

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Introduction

From 10-12 September in Herndon, VA USA, GeoGov Summit 2024 attracted over 200 leaders and professionals from across the public and private sectors. With a theme of “Advancing the National Geospatial Ecosystem: From Strategy to Implementation,” the Summit goal was to encourage implementation of a range of activities to further improve our national geospatial infrastructure, and in turn our ability to address a growing range of social, economic, and environmental challenges by applying the organizational power of geospatial information, technologies, and supporting infrastructure.

The NSDI Strategic Plan for 2025 through 2035 recently published by the Federal Geographic Data Committee (FGDC) incorporated many of the strategic recommendations resulting from the 2023 GeoGov Summit. With the recently published NSDI Strategic Plan as the basis for discussion, GeoGov Summit 2024 engaged attendees in pre-conference workshops, plenary events, and deep dive sessions to identify avenues of action for implementing the strategic goals and objectives contained within the Plan. This report summarizes key findings and recommended implementation actions emerging from the Summit.

The 2024 GeoGov Summit also continued Geospatial World LLC’s commitment to facilitate an ongoing and forward looking Government to Government(G2G) and Government to Business(G2B) forum, providing invaluable networking and partnership development opportunities essential to strengthening dialog, relationships, and commitment across levels of government, industry, academia, research, and civil society organizations. The Summit also served to highlight and celebrate the incredible value and impact that our national geospatial infrastructure has already delivered to our Nation.

The Summit event coincided with the 23rd annual observance of 9/11, with remembrances of those who lost their lives in the terror attacks on our nation. Speakers offered their stories of the tragic loss of life and the heroism of public safety personnel, government employees, and citizens in response to this terrible event. Collectively, speakers underscored the immense and unifying power of broad community collaboration and the actionable insights that geospatial information and technologies enable to save lives in the face of tragedy, and to help prevent such events in the future.

> “The GIS response to the World Trade Center attack was among the first instances where GIS played a central role in the response to a major disaster. Today it would be unthinkable not to utilize GIS before during and after a disaster event. We have made great advances in GIS practice and Technology since 9/11. Future response efforts will more easily handle the flood of data pouring into the EOC which overwhelmed us. AI, advanced communications, sensors, and collaborative software will also make response efforts more effective. The events of 9/11 were terrible. Hopefully the value we can extract from this tragedy is an improved preparedness and response so that in the future losses and suffering from disasters of any type can be held to an absolute minimum.”

Alan Leidner
Board Member NYC Geospatial Information Systems and Mapping Organization

The GeoGov Summit 2024 Program

The program for the 2024 GeoGov Summit was developed by an Advisory Committee comprised of leaders from across government, industry, academia and the not for profit community. From meetings held from February through June of 2024, the 2024 GeoGov Summit program of pre-conference workshops, plenary and deep dive sessions was shaped to attract and expand the range of stakeholders, and to inspire, encourage collaboration, and stimulate action in moving the NSDI Strategic Plan from strategy to action. The program was also structured to illustrate the impact and value that our National Geospatial Infrastructure has delivered across the public and private sectors, and to citizens. Major areas of focus included: transition from a largely Federal governance and coordination process to a “Whole of Nation” process, addressing workforce needs and readiness, encouraging collaboration in geospatial research and innovation, driving public and private investment, and encouraging greater industry engagement through piloting and partnerships.

NSDI Strategic Plan 2025-2035

Building the Geospatial Future Together

The Geospatial Data Act of 2018, identifies the FGDC as the interagency committee within the Executive branch of federal government to "...lead the development and management of and operational decision making for the National Spatial Data Infrastructure strategic plan and geospatial data policy..." GeoGov Summit 2024 focused heavily on assembling stakeholders to assist in identifying approaches for implementing strategic recommendations documented in in the recently approved NSDI Strategic Plan 2025-2035.

> Our aim is to ensure that NSDI becomes a highly responsive dependable and adaptable source of geospatial data services and knowledge, supporting everything from disaster response to public health to infrastructure and climate challenges. So, we have the strategy. Now the real work begins as we move from strategy to implementation. How can we work together to collectively achieve the vision of the NSDI? This is what we are all gathered for this Summit to consider...

David Applegate, Director, U.S. Geological Survey

David Applegate, Director of the USGS, which administers the FGDC Secretariat on behalf of the Department of Interior, opened the GeoGov 2024 Summit by characterizing the revised Plan and the geospatial community's national task as follows:

The NSDI success hinges on three key goals. The first goal is governance. The plan calls for a collaborative governance structure that includes all sectors and stakeholders ensuring Nationwide participation and accountability in decision making. The second goal is Data and Technology. The plan focuses on modernizing infrastructure and leveraging advanced technologies like artificial intelligence and machine learning to improve data usability, quality, accessibility, and interoperability. And the third goal is people.

> The NSDI strategic plan is a key component of the GDA and a path forward for our ongoing NSDI activities. The NSDI strategic plan was developed with inputs from a variety of sources, including FGDC agencies, the National Geospatial Advisory Committee, and geospatial partner organizations.
> **The plan expanded the previously more Federally focused strategic plan and developed a broader nationally scoped plan, designed to encourage active engagement and leadership from multiple sectors. The new plan presents a bold vision for the future of the NSDI in the U.S., emphasizing collaboration, partnerships, innovation, and technological advancement to create a seamlessly interconnected national geospatial ecosystem that delivers actionable insights to address the complex challenges of our time. The FGDC will work collaboratively with partners on implementation of the plan.**

Joshua Delmonico, Executive Director of the Federal Geographic Data Committee

The plan underscores the importance of building an inclusive geospatial workforce capable of advancing and leveraging the NSDI full potential. The plan also acknowledges key trends that will shape the future of geospatial data management such as big data analytics, AI, open data initiatives, and privacy and security considerations.

GeoGov 2024 Session Reports and Presentations

Pre-Conference

Session	
NSDI Marcom Workshop	
CDO/GIO Summit	Presentation
Workshop on ROI Assessment for National Geospatial Infrastructure	
Roundtable on Interdisciplinary Inter-organization Research and Innovation in Geospatial	Presentation
Community Benefits: Modernized National Spatial Reference System	Presentation
Piloting NSDI Governance and Coordination	

Main Conference

Session	
Welcome and Opening Keynote Address	
Plenary Session 1: Moving Forward - US Geospatial Strategy from Plan to Practice	Presentation
Keynote Address	
Plenary Session 2: Seeing is Believing - Communicating the Value of our Geospatial Ecosystem for National Development and Sustainability	Presentation
Fireside Chat: Driving Investment in Geospatial Infrastructure	
Plenary Session 3: Piloting to Practice for Advancing the Utility of Our Geospatial Ecosystem	
Plenary Session 4: Government and Governance: Advancing the NSDI for National Development and Sustainability	Presentation
Plenary Session 5: Readying the Geospatial Workforce to New Markets, Sources, Technologies, and Practices	Presentation

Deep Dive Sessions

Session	
The Integrating Power of Geospatial Across Communities	
Smart and Safe Communities & Citizen Services | Sustainable Energy Future | Transportation Safety	Presentation
National Geospatial Infrastructures, A Global Partnership Framework	Presentation
Geospatial Ecosystem Response to the Francis Scott Key Bridge Collapse	Presentation
Community Assessment of NSDI Geospatial Coverages	Presentation
Emergency/Disaster Management and Infrastructure | Agriculture, Health and Food Security	Presentation
Advancements in GeoAI Policy, Application, and Implementation	Presentation
Workforce Readiness: Current and Future Generations	Presentation
Closing Plenary: Capturing Ideas / Takeaways for Action	

Key Findings and Recommendations

The sessions convened at the Summit generated a range of findings and recommendations for the implementation of key NSDI Strategic Plan goals. The following represents a few of the key findings and recommendations stemming from session dialog. For a more detailed discussion of findings and recommendations as well as access to presentations delivered in Summit Pre-conference, Plenary and Deep Dive sessions, please click on the session links provided above.

"I would simply suggest NSDI is already emerging on the internet. I would like to assert it's already here. I know this is a big assertion on my part, but the thousands of geospatial services together with GIS portals that organize and dynamically integrate these services illustrate the fundamental architecture that is being deployed by many organizations, at many scales.

We don't have to effort at it, or have more meetings to design it, or rely on government sponsored software development. The rapid advances of evolving commercial technology is already becoming a huge and successful government infrastructure for sharing and collaboration.

The fundamental concepts and standards discussed over the past several decades have been helpful and are being deployed together with a variety of COTS technologies. The evidence of its success are the billions of maps made each day that leverage the power of interconnecting these multiple geo services both within and among diverse organizations from the local to national level. The result is a growing community of public and private organizations discovering, combining, creating, and sharing effective information products in an open geospatial ecosystem.

Can we do it better? Can standards and services improve? Can we have better collaboration? Can we better organize financial models for collaboration? Can we have more intuitional recognition and financial support for this pattern? Can the geospatial community get better recognition of the power of what's happening? Yes of course, but the NSDI ecosystem is already here and will evolve naturally, driven by many forces and many participants."

Jack Dangermond, President, Esri

Findings

- The recently approved NSDI Strategic Plan was overwhelmingly endorsed by Summit participants as an appropriate and concise strategy to address national geospatial infrastructure development needs in the next decade. The Plan is also positioned to support international cooperation to address broader regional and global issues through the Plan's alignment with the United Nations Integrated Geospatial Information Framework.
- The NSDI is here today and is providing significant benefit across government to address a range of social, economic, and environmental challenges. While not perfect or complete, there is an opportunity for growth through improved collaboration, innovation, and resources to expand data sharing and to provide actionable insights to address a range of critical challenges interests.

> As we look towards the future, the question isn't just how can geospatial data save the world, it's how can we use it to create a world that's more equitable, resilient, and prepared for the challenges ahead. We're talking about tools that can help us better manage natural resources, protect vulnerable communities, and optimize the distribution of renewable energy. We're talking about solutions that that can help governments plan for the future infrastructure needs or help businesses reduce their carbon footprint.
>
> **Bobby Shackelton,** COO, RiskThinking.AI

- Industry is benefitting significantly from access to the NSDI, building NSDI data and related products to address a range of challenges.
    - → Utilities build on authoritative geospatial data from the NSDI to support energy sustainability – across all phases of planning and operations including site selection, maintenance, and protection of generation / distribution components to geofencing to improve field worker safety in high crime areas.
    - → NSDI data combined with private sector data and workflows are improving modeling and forecasting of the risk associated with a range of events, helping the insurance industry's ability to underwrite for an expanded range of risks.

Local to federal geospatial data contribute to the NSDI, underpinning government mission and our economy, producing tangible return on investment:

- → Geospatial data and applications at the local level support a myriad of services to citizens and support critically important revenue generation.
- → The 3D Elevation NSDI theme developed by the federal government with partners nationwide is helping to improve decision-making in a number of areas including flood forecasting.
- → States are realizing significant value in the data they receive and aggregate from the local level. In Indiana, a recently completed study estimates a $4 billion impact on the economy can be attributed to the utilization of geospatial data in the State.

→ National NSDI foundation themes in many cases are the result of data aggregated from local and state government, enabling nation-wide insights.

→ Federal agencies and departments are deploying NSDI geospatial services to address a range of government and citizen needs from climate resiliency planning to extreme weather monitoring and forecasting, to social vulnerability insights.

- Society in the U.S. has become deeply reliant on geospatial information and infrastructure but is largely unaware of the NSDI as the underpinning framework to which other information is referenced for government, industry, academic/research, and societal use.

→ Despite its successes, a continuing conundrum heard repeatedly by Summit participants is that a clearer, simpler, definition of the NSDI is needed for stakeholders and the public at large – what it is, and what it is not, and to highlight the immense value it provides.

(Per the Geospatial Data Act of 2018, the National Spatial Data Infrastructure (NSDI) is defined as "… the technology, policies, criteria, standards, and employees necessary to promote geospatial data sharing throughout the Federal, State, Tribal, and local governments, and the private sector (including nonprofit organizations and institutions of higher education)

"Where we have been most successful over the years is being really clear about who the customer is for what we're doing. We can sometimes operate in a bit of an echo chamber, where we all collectively want our data to be better more interoperable for almost within a kind of echo of ourselves. We should be really brave about making sure we have someone we're delivering for."

Sarah Hodgetts, UK Geospatial Commission

→ There is a pressing need to build awareness and understanding of NSDI's value with those who contribute but lack understanding of its broader value.

- To ensure continued funding and resourcing of the NSDI, the geospatial community should:

→ Tie geospatial investment and resource requirements to key public sector / legislative purposes and needs,

→ Work with industry and philanthropic organizations to highlight incentives and encourage partnerships and investment,

→ Consider positioning geospatial and the NSDI as a "critical sector" underpinning all national critical functions, thereby encouraging Congress to assure funding to sustain the NSDI.

"In today's world where I used to have a role of a data producer, I'm also a custodian and now a user, because I now develop products and services for emergency management and others. Those "clients" of mine from yesterday are also producers and custodians as well. So, it's a more dynamic environment and this engagement to me is more of a challenge than anything else today."

Eric Loubier, DG, Canada Centre for Mapping and Earth Observation

- Stakeholder roles are changing rapidly. All stakeholders should recognize their part in an NSDI ecosystem where almost everyone at some point is a producer and consumer of geospatial information.
- Industry capabilities and capacity continue to improve at a rapid pace, challenging traditional government geospatial information management and application practices. There is strong interest among government and industry for a deeper exploration of industry capabilities, business models, and partnerships that would enable greater sharing of risk and reward in the access and application of industry capabilities in the public interest.

- Pilots, or “pathfinding” initiatives are being planned to test approaches for a scalable national solution to help guide a transition to “whole of community” national collaborative governance. The goal of these pilots is to engage a broad group of stakeholders together to solve a specific problem over a specific geographic area, and by doing so, organize and make decisions together in a governance/coordination process. Results of pilots will be evaluated to establish a scalable national process, with emphasis on codifying the governance process in a revision of the Geospatial Data Act of 2018 (GDA)
- While federal agencies are doing great work in building on the NSDI to produce impactful publicly accessible geospatial data products on topics such as climate resilience and wildfire monitoring, there are instances where multiple federal agencies have implemented similar public facing applications. This leads to potential user confusion and elevated cost.
- Disaster Response – recent whole of government response to regional disaster events, while successful, revealed opportunities for improvement through establishment of standing data sharing agreements, aligning organizational security / releasability rules, adopting common data sharing standards/protocols, and identifying avenues for rapid access to private sector information of value to support response.
- Workforce –multi-modal education / training approaches including all phases of life: K-12, higher education, competency development and certification programs, industry offerings are being established to help address geospatial workforce needs.
    - → Boosting K-12 focus on geography and related disciplines
    - → Integration of geospatial curricula with other physical and social sciences in academic degree programs
    - → Certification and Competency programs for lifelong learning
    - → Registry of resources for geospatial professionals to identify upskilling opportunities
- Geodesy Enables all of Geospatial.
    - → Geodesy underpins all of geospatial, and the workforce is aging out at a rapid pace.
    - → The Modernized National Spatial Reference System (MNRS) will roll out in 2025. While the transition will be challenging, the MNRS is expected to provide billions of dollars in benefits via increased accuracy, national consistency, transparency, workflow efficiency, and data interoperability.
    - → There is a nationwide geodesy crisis underway and an urgent need for new entrants in the geodetic discipline.

> Geodesy underpins all other geospatial Sciences, all geospatial technologies, a trillion dollar a year global geospatial economy, and the large fraction of all DOD platforms and systems. However, the US has been experiencing a persistent decline in geodetic capacity over the past 25 years. This loss has already impacted our competitiveness, and poses a threat to our national security...

Seneca Holland, Conrad Blucher Institute at Texas A&M Corpus-Christi

> The Modernized National Spatial Reference System will take advantage of modern science and technology. But more importantly, the benefits of this change will be immense. The modernized system will provide billions of dollars worth of benefits through increased accuracy National consistency transparency workflow efficiency and data interoperability... change is very hard - it’s expensive but it’s necessary to keep up with a changing, modernizing world.

Rachael Dempsey, Deputy Assistant Administrator for Navigation, Observations and Positioning at NOAA’s National Ocean Service

- Geospatial research is fragmented among universities, research institutes, and the private sector, resulting in duplication of effort, and missed opportunities to benefit from interorganizational inter-disciplinary collaboration to address priority community needs.

Recommendations

Summit participants offered a number of recommendations for action, many of which are summarized below. Recommendations have been aligned to the Governance, Data and Technology, and People Goals articulated in the NSDI Strategic Plan 2025-2035. Participants encouraged the formation of cross-sectoral teams of volunteers where possible to begin making immediate progress on implementation.

Governance

- **Transition to "Whole of Nation" Governance and Coordination -** Support the work of the NSDI Visioning committee to plan, secure resources, and conduct pilot projects around the country that will test collaborative governance models in conjunction with solving real-world geospatial problems. The goal is to identify approaches that can establish equitable representation by stakeholders, build trust, and be scalable. Pilot focus areas currently being considered include routing and navigation, public and private service delivery, improving community resilience, critical infrastructure Support, and public lands protection. The National Geospatial Collaborative (NGC) has expressed interest in taking the lead in facilitating governance pilot projects.
- **Promote Public Private Partnerships -** Establish an ongoing forum with government and industry on establishment of Public Private Partnerships (P3) and Public-Private-Philanthropic (P4) partnerships as a model to accelerate delivery of geospatial infrastructure for public good, while sharing risk and reward. Geospatial World LLC has committed to take the lead in establishing a P3 and P4 forum as part of its annual GeoGov and GeoBuiz events.
- **Promote Regional to National Interagency Coordination Protocols for Data Sharing During Emergencies/** Disasters to improve coordination among federal to local government agencies to ensure infrastructure readiness to collaborate / share: data sharing standards/protocols for Common Operating Picture, standing data sharing agreements to include access to private sector sources during emergencies, interagency exercises to test data sharing protocols and governance/coordination structures.
- **Increase Staffing / Funding of the Federal Geographic Data Committee.** As the inter-agency coordinating body for the Federal government, the FGDC budget has steadily decreased over the years to a point where it is severely challenged to meet its responsibilities as identified in the Geospatial Data Act of 2018. Adding to this burden is the increasing number of legislative mandates that call upon the FGDC to provide support.

Data and Technology

- **Conduct a Community Assessment of NSDI Data Themes** - The FGDC in coordination with the National Geospatial Advisory Committee and NSGIC, initiate a review and assessment of the utility and value of NSDI Foundational and NGDA data and related standards.
    - → Seek NSGIC and other interested COGO member organizations to convene and to faciliate this process in conjunction with the FGDC.
    - → Build on assessments already underway by state and local government, including Indiana, Texas and North Caroliina.
    - → Tie prioritization and assessment to mandates, roles and responsibilities, areas of current funding / resourcing.
    - → Include a review of standards, many of which are decades old, and consider generating an associated schema for standards to promote interoperability at all levels.
    - → Include broad representation by local, state, tribal, federal, industry, NGO, and academia.
    - → Consider data quality vs timeliness, and data retention.
- **Promote GeoAI Policy and Use** - Encourage broad participation in Federal and and non-federal AI Community of Practice forums to help shape GeoAI/ML policy and operational insights.
    - → Focus on development of GeoAI Practitioner and Governance Playbooks
    - → Advocate for democratized access to AI research resources such as High-Performance Computing (HPC) centers
    - → Advertise publicly available curated data sets for scaling geospatial analytics.
    - → Develop recommendations for robust training infrastructure for AI.
- **Inventory / Streamline US Federal Geospatial Applications** – Conduct an inventory of existing public facing geospatial applications in the U.S. federal agencies, identify redundancies, and encourage collaboration to reduce redundancy and expense.

- **Encourage Collaborative Geospatial Research**
    - → **Coordinate** development of a registry of research opportunities to boost transparency, collaboration among organizations and disciplines, reduce duplication of effort, and optimize use of limited community funding. (PC Research Roundtable)
    - → **Work with NSF** and other funding sources to establish focus and funding for geospatial programs that enable research to address priority community challenges.
    - → **Seek democratized** access to complex resources such as HPC and I-Guide to boost research community collaboration, knowledge connectivity, and outcomes related to topics like application of AI for change detection, high resolution flood modeling, Sustainable Development Goal (SDG) attainment.

People

- **Increase Awareness and Support for the NSDI** - Establish a working group / committee with a focus on programs and activities to enhance awareness and understanding of the NSDI in Congress and across the public and private sectors.
    - → Develop NSDI Communication Strategy and Plan
    - → Emphasize public and private sector participation.
    - → Address branding of NSDI to different communities / citizens
    - → Identify and document case studies, ROI exemplars, NSDI as critical/essential infrastructure.
    - → Clarify geospatial terms of use (e.g., Authoritative)
- **National Forum to Identify and Address Geospatial Workforce Education, Training, and Upskilling**
    - → Invite organizations such as The Geospatial Professional Network in partnership with interested academic, research, NGO, and industry organizations to convene and lead discussions to identify workforce needs and resources.
    - → Emphasize a mix of academic and lifelong learning opportunities including short duration programs to build competencies as well as certification / accreditation where needed.
    - → Emphasis on integration of geospatial expertise into user industries
    - → Establishment of a national registry of training / educational resources
    - → Near-term focus on addressing geodesy crisis
- **GIO, CDO, CIO Summit** - Establish a bi-annual or annual Summit / Workshop for Federal, State, local and invited industry Geospatial Information Officers (GIO), Chief Data Officers (CDO), and Chief Information Officers (CIO) to encourage further integration of geospatial information and technologies into the broader IT enterprise.
    - → Exchange of policy insights, best practice, organizational constructions
    - → Foster greater inclusion of geospatial information and technologies into the overall digital infrastructure
    - → Leverage existing CDO, CIO councils, NASCIO, NSGIC
    - → Geospatial World LLC has offered to organize and convene this event.

Conclusion and Next Steps

Participants of the 2024 GeoGov Summit collectively identified a host of actions that can be mobilized in the coming year to begin addressing the Governance, Data & Technology, and People goals and objectives identified in the NSDI Strategic Plan. Based on discussions during and after the conclusion of the Summit, sufficient interest from stakeholder organizations exists to begin addressing a number of the recommended actions identified in this report including: NSDI Governance Pilots, facilitated by the National Geospatial Collaborative; a community assessment of NSDI themes and layers, facilitated by the National States Geographic Information Council (NSGIC); Workforce Development facilitated by The Geospatial Professional Network, and planning and organization of an annual GIO, CDO, GIO forum facilitated by Geospatial World, LLC.

Acknowledgements

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