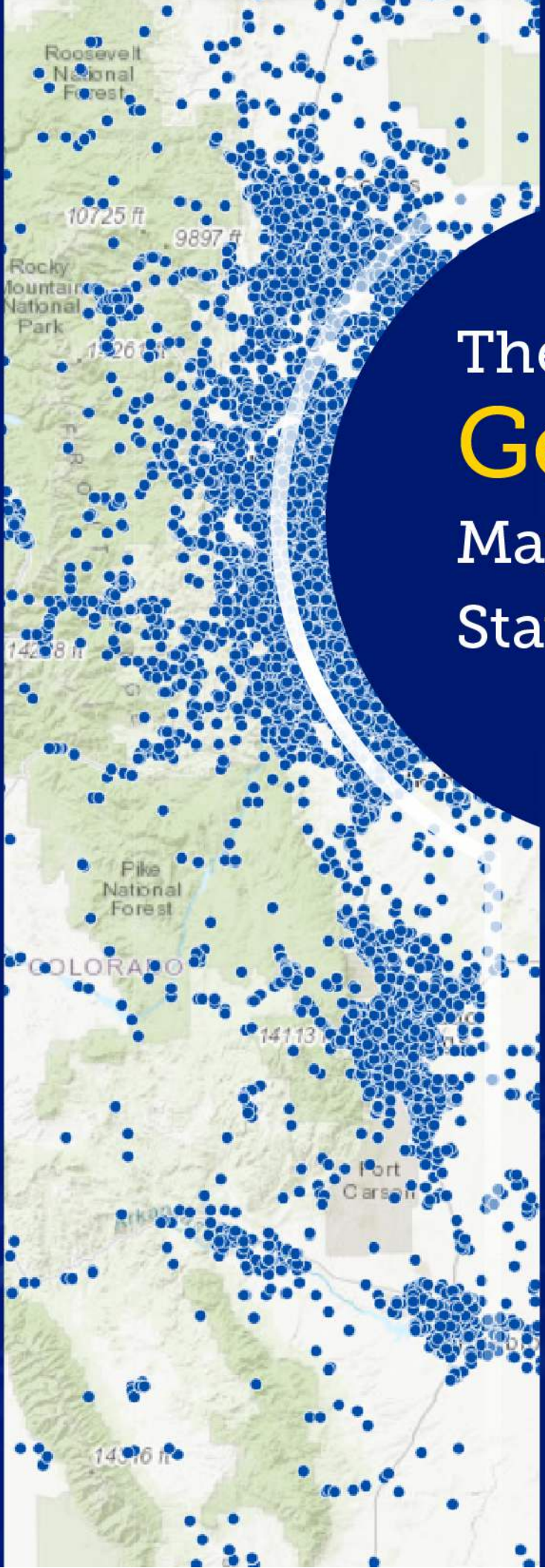
NASCIO STATE IT RECOGNITION AWARDS



The OIT GeoPortal: Mapping a Smarter State Together

CATEGORY
Information & Communications Technology

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COLORADO
Governor's Office of Information Technology

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EXECUTIVE SUMMARY

Imagine being a Division of Fire Prevention and Control Incident Commander, needing to coordinate a multi-agency response to a wildfire that sparked near a heavily populated part of town. Initially, coordinating a response of this magnitude was a logistical nightmare. Effective wildfire management relies heavily on Geographic Information Systems (GIS) data. Yet, responders often face outdated maps and imagery, conflicting data from different sources, critical data hidden behind paywalls and delays getting crucial information to frontline teams. In a situation demanding quick decisions, working with disparate mapping systems to help Coloradans navigate an unfolding natural disaster was incredibly difficult. Teams across state agencies, who make spatial decisions daily, often lack accessible tools to analyze and visualize this vital data. Software for using GIS data was too costly for individual agencies and required specialized skills, frequently creating barriers to effective response.

To combat the siloes created between Colorado state agencies, the GIS team within the Colorado Governor's Office of Information Technology (OIT) created a secure and robust platform: the GeoPortal. This modern, easy-to-use platform was designed to facilitate the seamless exchange of geospatial content across state agencies, allowing users to find data, explore applications and leverage resources from a central location at no cost. With a spatial data portal, a map viewer for visualizing various datasets and links to state and federal geospatial partners, the GeoPortal enables agencies to effectively address existing and emerging business needs through an accessible and streamlined user interface.

Any executive branch state employee can access the platform at no cost and start using GIS data today, and since its September 2024 launch, the GeoPortal has welcomed over 200 users from 18 different state agencies. The platform requires minimal training, is securely built on OIT cloud resources and has an extra layer of login-based security to ensure that only state employees can access it. Once in the application, users can access more than 500 geospatial products, including data layers, maps and applications that can help solve complex business problems. The GeoPortal and its various services have also been integrated into other agency workflows with great success; these success stories will be explained in more detail below.

IDEA

The State of Colorado, akin to numerous other states, maintains a significant investment in geospatial tools. Nevertheless, a substantial number of state systems remain outdated and compartmentalized within various agencies (including their own divisions), often behind paywalls, thereby complicating access to essential data and applications. Keeping NASCIO's 2025 State CIO Top 10 Priorities for state government in mind, OIT sought to create a portal application that was secure, stable and cloud-based (Priorities 1, 7 and 8) while also providing cost-effective tools for data management, analysis and visualization (Priorities 2, 4, 5 and 6).

The GeoPortal was created to establish a cross-agency platform for disseminating spatial data, maps, and applications. This spatial data-sharing platform empowers state employees to make informed, data-driven decisions without the need to remember additional login credentials or incur costs for viewing licenses. By cultivating a central hub for the geospatial ecosystem, we can efficiently integrate existing systems and data into the platform.

Before the GeoPortal, in the event of a significant disaster or a governor-led initiative necessitating the collaboration of multiple agencies, it would have been critical to select which platform provided access and to devise a means of sharing files back and forth. The GeoPortal now facilitates a singular access point for rapidly and efficiently retrieving datasets, maps and applications, rendering them readily available to decision-makers.

The central hub presents additional opportunities beyond merely serving as a shared viewing platform. It also facilitates agencies with minimal or no geospatial infrastructure in obtaining robust access to a secure platform for developing spatial data and geospatial workflows. The GeoPortal provides enterprise GIS capabilities at a reduced cost, along with comprehensive support from proficient GIS personnel to address inquiries and assist in constructing geospatial solutions.

IMPLEMENTATION

The statewide GeoPortal implementation resulted from months of careful consideration of the successes, needs, and challenges faced by Geographic Information Systems in recent years. Its deployment was completed with great attention to detail on infrastructure that ensured both security and reliability. So far, the impact has been extremely positive for state employees interested in geospatial technology.

OIT successfully implemented an enterprise GeoPortal by capitalizing on its established technological framework, including cloud services, a unified single sign-on system and existing relational database infrastructure. A renewed focus on project management methodologies further streamlined the implementation process, ensuring the efficient delivery of a state-wide geospatial platform accessible to all state employees.

The project's foundation was a comprehensive design phase where business analysts and project managers collaborated to confirm the project's viability within the defined timelines and budgetary limitations while considering ongoing application support needs. Following this crucial planning stage, OIT's Cloud Resources Team constructed the underlying infrastructure, which involved creating distinct development, staging and production GeoPortal environments. This strategic three-environment setup was critical for rigorous testing protocols and offered a reliable backup for the live production system. The staging and production environments were each configured with four servers to optimize load distribution and ensure rapid response times for user queries. Complementary administrative servers were deployed for continuous system monitoring and maintaining data integrity across the platform.

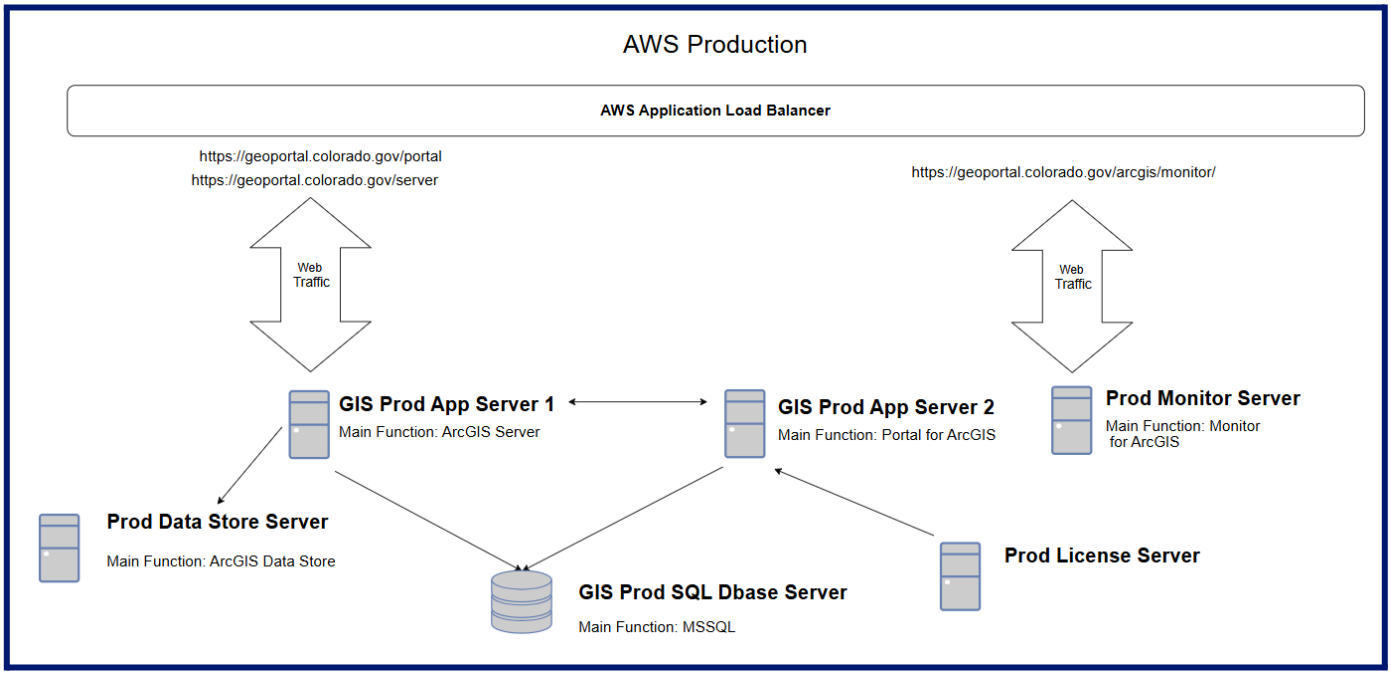

Image 1: System diagram of the GeoPortal's production AWS environment. Note that each server has an individual GeoPortal element, therefore distributing system resources across multiple machines.

The final phase involved the Communications Team, which played a vital role in the statewide rollout and adoption of the GeoPortal. Their efforts highlighted the platform's intuitive design, emphasizing that no specialized GIS knowledge or additional login credentials were required.

They also shared GeoPortal's potential to significantly improve existing project workflows by providing state agencies access to valuable GIS resources at no cost.

IMPACT

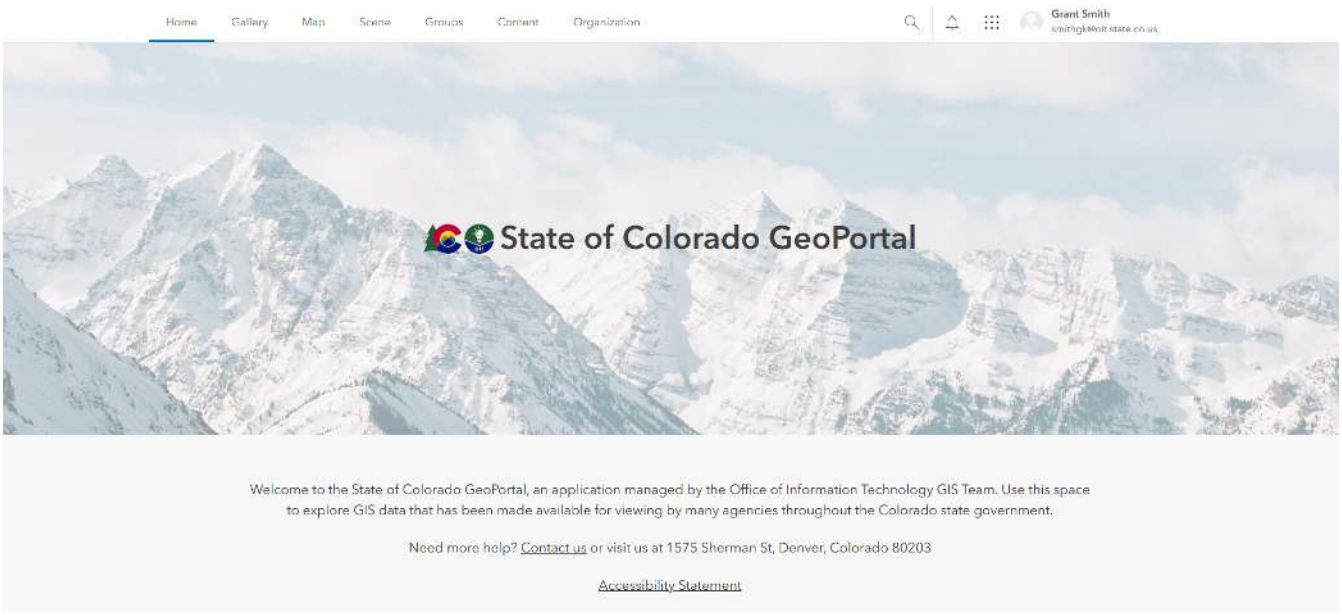

Image 2: Colorado GeoPortal Home Page

In recognition of the need for accessible geospatial data, the GeoPortal emerged as a unique innovation created by the GIS team. A top-down directive did not propel this initiative; instead, it stemmed from the team's passion for using technology to enhance government operations and empower state employees.

The true impact of the GeoPortal extends beyond its technology; it has fostered a cultural shift across state agencies. It has created a space for creative collaboration that previously did not exist. Agencies that once operated in data silos can now readily share and access spatial information. Additionally, access to this tool has led to unexpected partnerships and innovative approaches to problem-solving. For instance, the GIS team has begun collaborating with the Colorado Department of Agriculture (CDA) to collect field GIS data and store it in a centralized location, a collaboration directly enabled by the GeoPortal's shared data. Previous CDA partnerships with external consultants ended with high costs, overrun deadlines and poor quality data solutions that left much to be desired.

To explain how beneficial the transition to the GeoPortal has been, one CDA employee said:

> "The GeoPortal has helped our soil health program organize its many different forms, spreadsheets, and trackers in one place for easy data viewing, organization, and analysis. This has made our workflows faster, more efficient, and streamlined across our statewide remote team. We appreciate the excellent communication and quality of work OIT has provided us in developing this GeoPortal!"

Another CDA employee highlighted the value in using the GeoPortal to reduce manual data manipulation time and put more investment back into direct technical support with customers:

> "The GeoPortal development work with you [OIT GIS] and your team has been an invaluable experience for our team and our ability to provide the highest quality information to our partners and agricultural producers across Colorado. Utilizing the layers we have built together, we can track changes on the land and convey complex information to our audience with visual backups. Our ability to quickly and effectively manage the vast amounts of data we are collecting in a simple-to-navigate platform has increased our efficiency and reduced our office data manipulation time so that we can spend more time providing technical assistance in a meaningful way to our producers."

The GeoPortal is also being used as an intermediary for sharing state-restricted imagery with state employees; this specific solution helps agencies access recent, high-resolution imagery that would previously cost thousands of dollars to purchase individually on an agency-by-agency basis. The platform has catalyzed cross-agency partnerships, breaking down traditional barriers and fostering a more connected, cost-effective state government.

Furthermore, the GeoPortal has empowered employees who may have hesitated to work with GIS technology. By offering an intuitive and user-friendly platform, the GIS team has lowered the barrier to entry and encouraged experimentation. Employees who previously relied on external consultants or manual methods are now actively exploring and utilizing geospatial data daily. This has not only increased efficiency but has also fostered a sense of ownership and engagement with technology. The GeoPortal's success serves as a powerful example of how empowering teams to innovate can lead to significant positive change within government. The GIS team's initiative has demonstrated the value of forward, needs-based thinking and has inspired other teams to think creatively about how technology can improve state services.