

Arizona GIS: Past and Present

ASLD & AGIC Roles in the Development of GIS in Arizona

Arizona Geographic Information Council

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This presentation focuses on the need for GIS and GIS coordination in Arizona

What is GIS?

Why GIS is Important to ASLD

ASLD Leadership in Arizona GIS Development

Why Interagency GIS Development & Coordination are Important to ASLD

Why ASLD Established the Resource Analysis Division

Key ASLD, AGIC, & SCO Accomplishments

Key Issues

Key Benefits

Key Recommendations



What is a Geographic Information System (GIS)?

- GIS is a framework for gathering, managing, and analyzing data.
- GIS integrates many types of data, analyzes spatial data, and organizes layers of information into visualizations
- GIS reveals deeper insights into data, such as patterns, relationships, and situations—helping users make smarter decisions.
- Uses include:
 - Identify problems
 - Monitor change
 - Manage & respond to events
 - Perform forecasting
 - Set priorities
 - Understand trends

The Importance of GIS to the Arizona State Land Department (ASLD)

- ASLD manages over 9,000,000 acres of State Trust land for multiple purposes:
 - manage state trust lands and resources
 - enhance value and optimize economic return for the trust beneficiaries
 - use sound stewardship, conservation, and business management principles
 - manage and provide support resource conservation programs for the well-being of the public and the state's natural environment
- GIS provides the technology and tools to inventory, analyze, and provide information to manage Trust lands effectively and efficiently
- GIS allows ASLD to analyze data and visualize information in many forms:
 - Maps
 - Data modeling
 - Graphs and charts
 - Online applications

Map Production



Examples of ASLD GIS Uses



PALMS: Parcel and Land Management System



Data Modeling & Analysis



ASLD Provides Leadership for Arizona GIS Development

- ASLD historically concluded promoting GIS development in Arizona was in its best interests
- ASLD has long championed the development of GIS in other State agencies
- ASLD continued to increase its GIS use to manage the trust and integrated GIS with its business systems
- As GIS matured, ASLD required more and more geospatial data that resided in other agencies
- ASLD realized it was more cost beneficial to lead coordination and data sharing efforts than to develop and maintain the data it required in-house
- ASLD continues to support the development of GIS institutions in Arizona

- In July 1980, the Arizona Joint Legislature Budget Committee (JLBC) passed a resolution to determine if Arizona state agencies needed an "Automated Natural Resource Information System" with GIS capabilities
- A study team consisting of State members familiar with digital mapping technology was assembled and included members from:
 - Arizona Department of Transportation (ADOT)
 - Arizona Department of Revenue (ADOR)
 - Arizona Department of Water Resources (ADWR)
 - Arizona State Land Department (ASLD)
- After the study, JLBC concluded that the system should be housed in the Department of Transportation (ADOT)
- ALSD met with the other study team members and made the case that ASLD could best support the new (GIS) system because of State Trust Lands management requirements
- After the meeting, agency officials decided the system should be located in the State Land Department by expanding and redefining the ASLD Arizona Resource Information System (ARIS) program to include GIS capabilities and JLBC concurred

ASLD Acted Proactively to House the First State GIS

State of Arizona: Key GIS Events



The ASLD Resource Analysis Division (RAD) statutory language enabled ASLD to establish:

ALRIS: (ARS 173.2)

• Provide a geographic information system for the state land department and other public agencies in this state...

AGIC: (ARS 37.177.A)

• The Arizona geographic information council is established in the department... (ARS 177.D.2) Facilitate interagency coordination for the purpose of geospatial data sharing and supporting a geospatial clearinghouse...

State Cartographer's Office: (ARS 37.172.F)

• The office of state cartographer is established within the division. The commissioner is designated the state cartographer, but the commissioner may delegate the responsibilities and functions of the state cartographer under this chapter to an administrative officer of the division.

State Geospatial Clearinghouse (AZGeo): (ARS 37.173.1)

• Establish a clearinghouse of information... for geospatial data and statewide geographic information...

In 1982, the Arizona Land Resource Information System (ALRIS) was established within ASLD by the Arizona State Legislature "to provide a geographic information system for...public agencies in the state...provide training and consultation in the use of the system, related technical services and limited production services to system users"

✓ <u>BEFORE</u> ALRIS

- Arizona agencies (including ASLD) could not afford to develop and manage the full range of data required to do their work (e.g. manage trust lands)
- Arizona agencies needed access to data developed and managed by other agencies

✓ <u>AFTER</u> ALRIS:

- Facilitate interagency GIS coordination and data sharing
- Establish institutions and authority for Arizona GIS multiagency governance
- Obtain shared data and meet ASLD business needs
- Integrate ASLD GIS and business systems

Creation of ALRIS within ASLD

AGIC

ARIZONA GEOGRAPHIC INFORMATION COUNCIL

Creation of AGIC

In 1989, the Arizona Geographic Information Council (AGIC) was established by Executive Order 89-24 as Arizona's primary forum and oversight group for geographic information and geographic information technology issues and coordination efforts.

Primary functions:

- identifying standards, development, and implementation strategies to provide a framework in order to optimize the State's investment in geographic data and technology
- to serve as an advisory council to the Arizona State Land Department to provide guidance and direction in the management of a State Geographic Information System
- originally composed of an Executive Management Board with members from seven state government agencies (State Land, Water Resources, Environmental Quality, Game and Fish, Transportation, Revenue, Administration)

In 1992 AGIC Membership redefined to add state, local, federal, university and private sector representation

In 2009 AGIC was established as a Legislative Council



State Cartographer's Office

- AGIC identified the need for a State Cartographer's Office
- ASLD identified the need to fund a position to meet the increasing demands of supporting GIS interagency GIS coordination and to facilitate data sharing in support of ASLD
- ASLD identified the duties of the State Cartographer's Office to coordinate with agencies outside of ASLD
- The State Cartographer's Office (SCO) was established in Arizona statute in 1988 and was funded by the Arizona State Land Department in 1995.
- The State Cartographer is responsible for developing and managing a long-term program to:
 - Provide AGIC support and coordination
 - Conduct projects to develop prioritize geospatial data for ASLD and AGIC
 - Facilitate geospatial data sharing
 - Develop the platform and promote the use of the Arizona GIS Clearinghouse (AZGeo)

AZGeo

- The 2009 AGIC Strategic Plan & Business Plan identified how an Arizona Geospatial Clearinghouse could share geospatial data and GIS services in ways that benefit the state and the public
- AGIC identified as its Strategic Goal #1 to "Facilitate the productive application and sharing of geospatial data and GIS and location- based services to address the needs of Arizonans by establishing a Clearinghouse with statewide accessibility."
- ASLD and the SCO led activities to develop and implement an Arizona Geospatial Clearinghouse now known as **AZGeo**



	Arizona	Arizona State Land Department				
Entities established by ARS 37.171 to 173 (RAD) to conduct statewide GIS coordination	Land Commissioner & State Cartographer Resource Analysis Division (RAD)					
Function/Purpose	Chief Information Officer/ Geographic Information Officer					
Arizona Geographic Information Council	State Cartographer's Office	Arizona Land Resources	GIS Section	Information Technology (IT)		
		(ALRIS)	ASLD GIS Projects	ASLD IT		
Statewide GIS Coordination Members appointed by Governor	Assigned by Commissioner to Coordinate with other agencies and AGIC	Statewide GIS Database & Geospatial Clearinghouse (AZGeo)	and Data			

- Conducts the annual AGIC Geospatial Education and Training Symposium (Major Arizona GIS information exchange event)
- Established the Arizona CORS Network (improves location control)
- Arizona Statewide Orthophotography Program (aerial imagery)
- AGIC Geospatial Data Sharing Guidelines (now being updated)
- Updated RAD Statutes in 2009 to strengthen GIS coordination and data sharing capabilities
- Conducted AGIC Strategic and Business Plans in 2009
 - Identified stakeholder needs and ideas to improve Arizona GIS coordination
 - Identified AGIC priorities to focus on state enterprise GIS
 - Established the requirements and a plan for implementing AZGeo
- Implemented, operating, maintaining, and seeking sustainability for AZGeo as the Arizona GIS Clearinghouse

Key ASLD, AGIC, & SCO Accomplishments

Some Statewide GIS Coordination Successes

AZGeo Development and Governance	AGIC Education and Training Symposium	Next Generation 9-1-1 (NG911)	EMAP/Data Uploader
LiDAR and 3DEP	NAIP Imagery	Census & Local Update of Census Addresses (LUCA)	National Address Database (NAD)
Statewide Parcel Data Layer	Arizona All Roads Network and Implementation of USDOT ARNOLD	Statewide Address Point Data Layer	Broadband GIS

Key Issues

There is a **high cost** to initially develop geospatial data, integrate data that originates from other organizations, and apply standards to build GIS databases.

GIS **benefits** for ASLD and AGIC participants come from analyzing geospatial data, often multiple times, to create useful information, produce maps, and provide products and services which allow data driven decision making

Issues

- The State of Arizona needs ongoing GIS coordination and governance which ASLD, AGIC and the SCO have historically provided
- In 2017, ASLD determined the SCO was non-essential to ASLD core business needs, eliminated the SCO staff, and its duties were delegated to existing ASLD GIS staff.
- ASLD benefits greatly from interagency GIS coordination & data sharing
- ASLD is in a strategic position to continue providing this important leadership role and has the opportunity to help shape the future of GIS development in Arizona

ASLD benefits from State GIS Coordination in many ways:

- Data Sharing: allows agencies, including ASLD, to share data; supports ASLD business needs
- Coordination & Standards: ASLD provides the leadership needed to implement data guidelines and standards which facilitates that data from agencies are authoritative, accessible, and can work with ASLD data
- AZGeo: ASLD provides ALRIS and AZGeo management oversight; ASLD, and other agencies, can access shared geospatial data and GIS applications

Key ASLD Benefits

Key AGIC Benefits

As GIS in Arizona continues to develop and evolve, the benefits initially realized by ASLD are now realized by all participating AGIC members.

- Data Sharing: allows all participating agencies to share data; supports organizational business needs
- Coordination & Standards: AGIC committees provide the expertise to develop required to implement data guidelines and standards
 - AGIC approves committee guideline and standards recommendations
 - AGIC approved and endorsed guidelines and standards facilitates that participating agency data are authoritative, accessible, and are compatible with other AZGeo data
- AZGeo: AGIC provides recommendations so that participating agencies, can access shared geospatial data and GIS applications

By maintaining a leadership role, ASLD has an opportunity to continue to shape the future of GIS development and coordination in Arizona

It is recommended that ASLD continue its leadership role in order to:

- Remain at the forefront of State GIS development
- Capitalize on the benefits of GIS coordination and data sharing

It is recommended that ALSD assure resources are available to:

- Support approved ongoing AGIC priorities and activities
- Facilitate geospatial data development
- Promote interagency data sharing
- Sustain AZGeo
- Develop a Statewide GIS Coordination Role to support ASLD, ALRIS and AGIC

Key ASLD Recommendations

Key AGIC Recommendations

AGIC can continue to shape the future of GIS development and coordination in Arizona.

It is recommended that AGIC continue its Council roles and responsibilities in order to:

- Provide a forum to facilitate State GIS development
- Educate agencies on the benefits of data sharing and GIS coordination

It is recommended that AGIC continue to:

- Support committees developing GIS guidelines and standards
- Facilitate geospatial data development
- Promote interagency data sharing
- Provide guidelines and support for AZGeo geospatial data and GIS applications access, integration and functionality
- Support ASLD's Statewide GIS Development and Coordination Role
- Approve & prioritize AGIC committee recommendations

Thank You!

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