NADO RESEARCH FOUNDATION

GIS Technology:

Enhancing Regional Planning & Development

FINAL REPORT FOR THE REGIONAL GIS ADVANCEMENT SCHOLARSHIP PROGRAM

A SPECIAL PROJECT OF THE NADO RESEARCH FOUNDATION

IN PARTNERSHIP WITH THE US ECONOMIC DEVELOPMENT ADMINISTRATION AND ESRI

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Executive Summary

In 2002, the US Economic Development Administration (EDA) awarded the National Association of Development Organizations (NADO) Research Foundation a $175,000 grant to help regional planning and development organizations build their geographic information systems (GIS) capacity. In partnership with the Environmental Systems Research Institute (ESRI), the NADO Research Foundation awarded 59 scholarships for GIS training and software to regional organizations designated as EDA economic development districts. The project also featured GIS training sessions at NADO conferences.

The project was a pilot initiative to evaluate and identify the practical benefits of using GIS as part of regional community and economic development. As this report details, regional development organizations are using GIS for a variety of strategic planning and community development services. Many regions employ GIS to enhance the development and implementation of their comprehensive economic development strategies (CEDS). A number are using GIS for land use analysis, industrial park marketing, local infrastructure inventorying, and zoning and census tracking. Others use the technology for rural transportation planning, including centerline road mapping. Some regions are now incorporating GIS into their homeland defense and disaster mitigation programs. Several regions use GIS to plot brownfields in their areas and promote them as opportunities for economic revitalization opportunities.

Many regions employ GIS to enhance the development and implementation of their region's comprehensive economic development strategy (CEDS).

Using ESRI's ArcIMS software, a number of regional development organizations are using the Internet and broadband technologies to make their GIS data and services available to local governments and businesses in their regions. Other, more innovative, uses include tracking illegal dumpsites, coordinating an aero-tourism business, studying the impact of intermodal transportation on regional economic development, and monitoring abuses against the elderly.

The project was structured to help regional development organizations currently using GIS at a minimal level to become more proficient and enhance their GIS capacities, and to give those without GIS a chance to acquire the technology and receive training. While a region might be using GIS for plotting the most efficient emergency routes, they may not have been using it for economic development planning. The project was geared to help regions embrace the many uses of GIS and incorporate these applications into daily routines.

This report provides a summary of the project, including the need and justification of the project, the process for selecting scholarship recipients, and examples of ways that regional development organizations are using GIS to improve their local communities.

Understanding Regional Capacity for GIS Applications

To effectively plan and implement programs and services, community and economic development practitioners across the country are turning to GIS to help them increase their capacities to meet their constituents' needs. Local communities, especially those that are economically distressed, often lack the capacity to craft programs to respond to the needs of their citizens. They typically turn to their regional development organizations for assistance.

Regional organizations that make use of GIS and other technologies are well suited to help their local governments and businesses fare better in the competitive world of economic development. Districts without the technology or the skills to use it find they have a more difficult time competing for the investments assistance needed to stimulate local economies and increase jobs and income.

A 2000 NADO Research Foundation survey of regional development organizations including economic development districts (464 were queried; 63 percent responded) found that 69 percent of respondents use GIS and global positioning systems (GPS). While another 20 percent were considering the benefits of GIS, 11 percent responded they were not using, or considering using, the technology.

Interestingly, EDA planning grants and transportation planning initiatives were among the three most prevalent federal programs administered by all respondents and many use GIS to plan and implement these programs. A resounding 81 percent of the respondents who use GIS stated they use it for transportation planning, 75 percent use it for land use planning and 69 percent reported using it for community and economic development.

The survey found that regions are using GIS for a wide variety of other disciplines: emergency response routes and enhanced 911 services, flood plain mapping, infrastructure inventory and planning, zoning, brownfields identification, school bus and transit routes, public transportation services, natural resource management, tourism development, and housing.

A resounding 81 percent of the NADO survey respondents who use GIS state they use it for transportation planning, 75 percent use it for land use planning and 69 percent report using it for economic development.

While the survey found 69 percent are using GIS, many districts had yet to tap the full potential of this powerful technology. A region may use GIS for transportation planning, for example, but not for economic development. In part, this is due to lack of training and program resources. A number of regions said they had a difficult time retaining and attracting technical staff in rural areas.

About the Regional GIS Scholarship Program

The NADO Research Foundation, in partnership with the US Economic Development Administration and ESRI, launched the GIS scholarship program in December 2002. The program was designed to provide regional development organizations, including the 320 EDA economic development districts, with an opportunity to upgrade their GIS programs through enhanced software and training.

A selection panel comprised of GIS technical staff and economic development experts, including EDA officials, received and reviewed 127 applications during the two award cycles. The panel granted 59 scholarships under the three categories, including 40 awards at the introductory level, nine at the intermediate level and ten at the advanced level. The scholarship cycles started in March 2003 and July 2003.

All scholarships included ArcView 8.3, ESRI's most current product at the time. Recipients also received invaluable training and technical assistance from ESRI's Virtual Campus – an online service which allowed participants to receive training at their desks and at their convenience, without incurring any travel expenses related to attending off-site events. An in-kind match of $500 was required, and recipients were required to possess the necessary computer hardware and to cover the costs of future ESRI maintenance agreements during the post-scholarship period.

EDA's grant investment of $175,000 for the scholarship program yielded in-kind contributions exceeding $100,000 from the 59 recipients and the NADO Research Foundation. In addition to the online training, each recipient was tasked with completing a project to demonstrate their enhanced GIS capacity.

The three scholarship levels were:

- **Level One: Introductory Level.** This level was for regions not yet familiar with GIS and in need of software, basic training and technical assistance to get started.

- **Level Two: Intermediate Level.** This level was an upgrade package aimed at regions that were using GIS, but not to their fullest potential. The package included software upgrades and extensions, plus online training.

- **Level Three: Advanced Level.** A growing number of regional development organizations have a full grasp of GIS and its potential. This level was aimed at helping regions incorporate their GIS technical capacities with the Internet through ArcIMS.

The NADO Research Foundation partnered with EDA and ESRI to undertake a three-tiered scholarship program to help regional development organizations build their GIS capacities. The program benefitted both beginners and intermediate users, as well as advanced users leveraging their GIS capacity with the Internet.

GIS Helps Regions Build Stronger Economies and Improve Services

Geographic Information Systems (GIS) are proving to be powerful tools for enhancing the community and economic development programs and services of regional development organizations. While regions have used GIS technology in the transportation and land use planning fields for decades, these organizations are now broadening their use of GIS applications to housing, homeland security and domestic preparedness, industrial development and recruitment, and social services.

Following are snapshots of ways that several of the NADO Research Foundation scholarship recipients are using GIS to improve services and programs in their regions:

GIS Improves Regional Economic Planning Processes in Iowa

Iowa Northland Regional COG
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The Iowa Northland Regional Council of Governments (INRCOG), located in Waterloo, serves six counties and 53 communities in the northern part of the state. INRCOG began using GIS in 1997 for most of its planning, development and grant applications. The scholarship helped the group upgrade their ArcView from 8.1 to 8.3. With the increased skills and technology, the organization is now using GIS to help communities

Training Critical to Enhanced GIS Capacity Within Regional Development Organizations

Training was offered to scholarship recipients in two forms: via the Internet and in conference/workshop settings. The Internet based training allowed participants to receive training at their own pace and on their own schedules. This was particularly valuable to participants located in rural and remote areas that have difficulty traveling to on-site training events. ESRI provided technical support via the Internet and telephone, enabling participants to receive assistance for specific questions or problems. Many of the recipients arranged the training so that more than one staff member participated in each course. Most of those trained were economic development and transportation planners; others included GIS specialists, executive directors, research assistants and program managers.

Feedback from participants about the training revealed that the virtual campus arrangement was conducive to learning at their own pace and within the time frames of their work environments. Participants at the workshops at NADO's Annual Training Conferences in Reno (September 2002), Minneapolis (September 2003) and Orlando (August 2004) benefited from best practice examples of regions as well as from hands-on training in the computer lab. Almost all scholarship recipients reported their GIS capacity increased as a result of the program.

throughout their region prepare plans and grant applications for various economic development initiatives.

INRCOG used the new technology to complete the comprehensive economic development strategy (CEDS) for their region in 2004. GIS maps produced by INRCOG and included in the CEDS addressed labor migration patterns, transportation routes, soil quality, metropolitan trails, and industrial parks.

Region in New York Uses GIS for Local Planning

Southern Tier West RPDB (NY)
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In New York, the Southern Tier West Regional Planning and Development Board (Southern Tier) significantly enhanced its GIS operations through the scholarship program. Already well-versed in ArcView 3x and its extensions and ArcIMS, Southern Tier increased its internal GIS capacity by training its planning staff who are now producing enhanced maps and data for the three-county region.

Southern Tier's transportation department used the technology to enhance the marketing of a transportation corridor in the region, including improved maps of infrastructure that prospective businesses could use along the corridor. The group is using GIS to help the West Valley Nuclear Site develop a strategy for selling land contingent to the site to businesses. They have assisted a local town throughout its comprehensive planning process by supplying maps that display parcel locations, ground slopes, existing and future land use, and geographic characteristics.

GIS Airlifts Natural Resource-Based Tourism in NW Mississippi

South Delta PDD (MS)
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The South Delta Planning and Development District, headquartered in Greenville, Mississippi, provides services to six counties and 35 municipalities in the northwestern corner of the state. The GIS scholarship facilitated the district's first foray into the world of GIS.

Using GIS to locate and plot the facilities, the South Delta PDD and tourism related businesses are hoping to increase the level of wildlife-based tourism in the region.

The South Delta PDD's service area includes portions of the Delta National Forest and the Yazoo River. The area is rich in wildlife and fish; the forest is world re-known for its hunting and fishing opportunities. Income related to natural resource tourism (hotels/motels, restaurants, gas stations and convenience stores, fishing and hunting fees, equipment, guides, rental cars, tour buses) is exceptional.

To facilitate the growing tourism industry and to help bring more hunters, fishermen and tourists in general to the forest and the surroundings, tour outfits in the region are looking at aero-tourism. The South Delta PDD is helping this initiative by mapping rural airports within a 50-mile radius of the Forest.

Using GIS to locate and plot the facilities, the South Delta PDD and tourism related busi-

nesses are hoping to increase the level of wildlife-based tourism in the region. The PDD recognizes the potential ripple effect for local economies as hunters and others come to enjoy the forest and all it has to offer while spending their travel dollars throughout the region.

Mapping Brownfields for Economic Recovery

Northeast Ohio Four County RPDO
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The Northeast Ohio Four County Regional Planning and Development Organizations (NEFCO) provides services to 126 units of government located in a four-county region. Using the software and training provided through the scholarship, NEFCO worked with data from the Ohio Environmental Protection Agency's Division of Emergency and Remedial Response (DERR) to plot sites that may potentially be defined as brownfields and could be cleaned up and redeveloped.

This was the first step in preparing a map using GIS that shows brownfields locations throughout the four county area. The next phase will involve culling the data to include only brownfields properties, and to be inclusive as possible with regard to identifying brownfields in the region.

NEFCO plans to make the brownfields maps available to local governments in the region for their planning uses. Ultimately, the information will include descriptive data about each site and will identify information about conditions that can be used for planning and marketing purposes.

Using GIS to Reduce the Digital Divide in Southwest Georgia

Southwest Georgia RDC
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Within the past 10 years, two textile and apparel factories closed in Pelham, Georgia, a small city of 4,000 in the southwest part of the state. To help position itself as an ideal location for potential businesses and industries, the city asked the Southwest Georgia Regional Development Center to produce GIS maps that locate the city's broadband customers. The city also wanted the maps to show the different signal strengths and antenna types. The city has used the maps to expand its technology infrastructure as a means to recruit more business.

GIS Data Fuels Energy Cooperative Investment Decisions in Wisconsin

West Central Wisconsin RPC
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Using the technology and training provided through this program, the West Central Wisconsin Regional Planning Commission conducted a growth analysis for the Eau Claire Energy Cooperative. The commission compiled census data, building permits, transportation count data, land use changes and proposed transportation improvements into a series of maps for the cooperative.

The data showcases the growth trends in the cooperatives' service territory, allowing the group to use the data to make more educated decisions regarding utility investments.

GIS Helps Florida Counties Prepare for Storm Surges in Hurricane Season

Southwest Florida RPC
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The Southwest Florida RPC serves a six county area that includes 1.3 million residents and continues to see major growth in new residents. While the weather is typically amenable, the region is subject to disastrous hurricanes as witnessed during 2004. The RPC has taken a lead in providing information to the region about impending storms. Equipped with ArcIMS, obtained through the scholarship program, the RPC can now upload regional hurricane data to their Web site, including data on hurricane shelters, hospitals and evacuation zones. The information posted on the Web also shows areas in the region that are susceptible to storm surges set-off by tropical storms and hurricanes.

While the West Central Wisconsin RPC has been using GIS technology for more than a decade, the scholarship program helped position the commission as the "first-call entity" for GIS related data requests. The RPC provides information on a regular basis to local, county, regional and state economic development officials. An added benefit is that the commission now integrates land use, natural resources, transportation, and infrastructure as part of its comprehensive planning efforts.

GIS as Sleuth: Mapping Illegal Dumpsites in Missouri

Meramec RPC (MO)
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Illegal dumping has emerged as a major issue in the region served by the Meramec Regional Planning Commission (MRPC) in south-central Missouri. The MRPC provides services to seven counties and 29 municipalities. Working with the Ozark Rivers Solid Waste Management District, MRPC has taken on the issue of illegal dumping as part of its strategy to promote a desirable quality of life for present and future residents and businesses.

The scholarship program gave MRPC new skills and technology that supplemented their existing GIS capabilities, allowing them to identify and map 69 illegal dumpsites in the seven county region. Mapping the sites was critical to showing the illegal sites' locations and size, as well as proximity to the region's water supply.

Further studies using the data generated by this first phase of the project will show the potential impact of the sites on water quality and will be used in clean-up efforts.

Working with GIS to Assure Residential and Retail Compatibility in Maine

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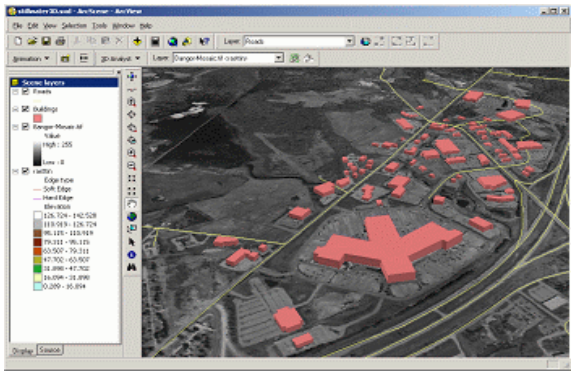
As Bangor, Maine responds to issues associated with urban development, it became apparent that one section of this small city of roughly 30,000 people was particularly challenged by fast growth of retail development approaching traditional residential neighborhoods. The Stillwater Avenue corridor had become congested and was experiencing significant problems due to increased traffic. Local residents were concerned that the increasing retail traffic would negatively impact their neighborhoods.

The Bangor Area Comprehensive Transportation System (BACTS), which serves as the

Metropolitan Planning Organization (MPO) for the area, determined a transportation study of the corridor was needed. Working with the Eastern Maine Development Corporation (EMDC), GIS maps were prepared to show undeveloped land along one portion of the corridor, flood zones, wetlands, habitats as well as existing retail buildings. Potential buildings were also mapped, along with existing roads and parking lots. The information will continue to be used to determine which portions of the corridor will be preserved because of wetlands and various rare species located in the habitat. The data and maps will also help determine new development locations and resulting vehicle and pedestrian access.



Conclusion: GIS Potential at the Regional Level Is Unlimited

It is clear that GIS tools and technology are essential to the future progress of regional development organizations. As this report documents, regions that have built their GIS capacity are using it widely and wisely.

The technology and training provided through the NADO Research Foundation pilot project has helped regions from around the nation enhance their capacities to use GIS as a planning, program delivery and management tool. GIS data and maps can be used for all types of planning efforts: economic and business development, transportation, disaster mitigation and recovery, homeland defense, natural resource management, infrastructure, and so on. It is also being used creatively to help prevent illegal dumping, to expand aero-tourism opportunities in rural regions, and to help rural electric cooperatives determine investment strategies. The present and potential uses of GIS are unlimited when regional development organizations have stable and sustainable funding, trained staff and organizational support.

As regional development organizations continue to see their roles expand, and as they are pushed to provide more assistance to local governments and businesses within their service areas, it is critical for them to seek new and more resources to meet the growing needs. To be competitive, regions must have the technology tools and skills necessary to provide enhanced information for decision-making. GIS is one tool that has proven to help make regional development organizations more competitive, efficient and effective partners for their regions.

> “GIS is one tool that has proven to help make regional development organizations more competitive, efficient and effective partners for their regions.”

— NADO Research Foundation —
Regional GIS Advancement Program
Scholarship Awardees

Cycle One – March 2003

Level I – Introductory
Central New York RPDB
Great Northern Development Corp. (MT)
Region 9 Development Commission (MN)
Region XII COG (IA)
Southern Mississippi PDD
Southwest Mississippi PDD
SW Arkansas PDD
Texoma COG (TX)
Tri-County Council for Western MD

Level II — Intermediate
Arrowhead RDC (MN)
Eastern Maine Development Corporation
FIVCO ADD (KY)
Iowa Northland RCOG
Northwest RPC (WI)
South Central Ozark COG (MO)
Southern Tier West RP&DB (NY)

Level III — Advanced
Capital Area Planning Council (TX)
Merrimack Valley RPC (MA)
Purchase ADD (KY)
Southwest Florida RPC
West Central Wisconsin RPC

The NADO Research Foundation wishes to extend our appreciation to members of the scholarship review committee for their time, energy and professional counsel.

Joe Brannan, Texas
Steve Haley, EDA HQ
Gary Gorshing, Oklahoma
Brent Lanford, Georgia
Frank Monteferrante, EDA HQ
Brian Schrantz, New York
Robert Strother, South Carolina
Guy Winterberg, Maryland

Cycle Two – July 2003

Level I – Introductory
Acadiana RDC (LA)
Apalachee RPC (FL)
Central Oklahoma EDD
Chattanooga Area RCOG (TN)
Coastal Bend COG (TX)
Coastal Georgia RDC
Heart of Georgia RDC
High Country COG (NC)
Indiana 15 RPC
Kisatchie-Delta RPDD (LA)
Meramec RPC (MO)
Mid Minnesota Development Commission
Mid Missouri RPC
North Country Council (NH)
Northeast Ohio Four County RPDO (OH)
Northern Arizona COG
Northern Neck PDC (VA)
Northwest Pennsylvania RPDC
Ohio Valley RDC
Northern Maine Development Corporation
Northwest Michigan COG
Panhandle Area Development District (NE)
Region II PDC (WV)
South Central Dakota Regional Council (ND)
South Central Tennessee DD
South Delta PDD (MS)
SW Oklahoma Development Authority
Southern Indiana Development Commission
Upper Cumberland Development District (TN)
Upper Exploreland RPC (IA)
Upper Savannah COG (SC)

Level II — Intermediate
Grand Gateway EDA (OK)
Southwest Georgia RDC

Level III — Advanced
First District Assn. of Local Governments (SD)
Gennessee/Finger Lakes RPC (NY)
Middle Georgia RDC
Southern Iowa COG
Western Arkansas PDD

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