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# The Ohio GIS Network: Stage 2 1996 Investment Fund Grant First Year Progress Report to the Ohio Board of Regents (Ohio GIS Network)

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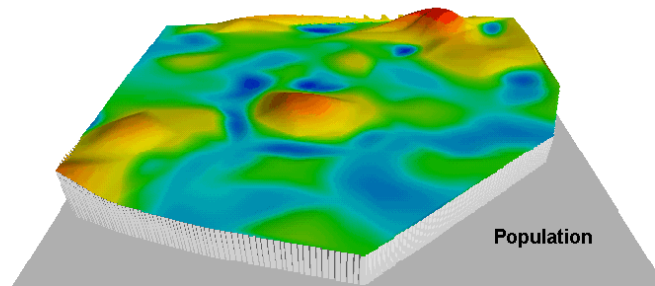
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# **The Ohio GIS Network: Stage 2 1996 Investment Fund Grant First Year Progress Report**

to

**The Ohio Board of Regents**



**Ohio GIS Network is a collaboration of**

**The Urban University Program  
and  
The Rural University Program**

**Participants include**

**Cleveland State University  
Kent State University  
Ohio State University  
Ohio University  
University of Akron  
University of Cincinnati  
University of Toledo  
Wright State University  
Youngstown State University**

September 12, 1997

**The Ohio GIS Network**  
**1996 Investment Fund Development Grant**  
**First Year Progress Report**

September 8, 1997

**PROJECT DESCRIPTION**

The Ohio Geographic Information Systems Network (Ohio GIS-Net) is an innovative consortium of Ohio's urban and rural universities. The consortium is building a center of excellence where state-of-the-art geographic information systems (GIS) technology is applied to a research agenda that is critical to Ohio's economic development and central to research issues in policy sciences, civil engineering, public administration, economics and the environmental, urban and regional sciences. This cutting edge technology is an essential component of the basic research infrastructure of universities. It is also a critical resource in state and local economic development efforts, building and maintaining public infrastructure, and in addressing environmental issues. Ohio GIS-Net seeks to focus research and technical assistance resources in the university consortium on the cross-cutting issues of economic and regional development, infrastructure investment, and environmental management.

In 1993, five members of the consortium received a \$100,000 Investment Fund development grant from the Ohio Board of Regents (OBOR). This grant was used to initiate Stage 1 of the development of the network. The five universities included Cleveland State University, Ohio University, University of Akron, Wright State University, and Youngstown State University. Additional universities were funded by the 1996 Investment Fund grant from OBOR, initiating Stage 2 of the project.

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<sup>1</sup> GIS is an information management system that collects, stores, retrieves, analyzes, and displays spatially-related information. It permits analysis of geographically related data, the application of these data to analytical models, and the interactive display of data output in maps, graphs and tables. GIS technology is a powerful tool for technical and applied research and can be an important aid in decision-making in both the public and private sectors.

In the first stage the five universities made the Ohio GIS-Net a reality by leveraging the grant into an investment of over \$357,000. These investments have been highly successful in achieving targeted levels of capital investment in GIS equipment through the OBOR planning grant and, with leveraged funds, in investments in software, establishing standards, professional training, database development, and providing the foundation for a substantive research agenda and attracting non-state research grants. These accomplishments laid the ground work for further success in implementing the Ohio GIS Network, including the award of the more substantial 1996 Investment Fund grant.

This progress report is for the first year of the 1996 grant. While some early research achievements have already been attained, this report focuses on the facilities in place, the preliminary plans for activities for the next two years, identification of outcome measures, and feedback on the Investment Fund process. Subsequent annual reports will identify research and related achievements. A separate progress report is provided for the 1993 development grant.

### **FACILITIES IN PLACE**

Budget expenditures from the grant, by institution, are shown in Table 1. Appendix A details the facilities purchased.

**Table 1**

#### **OHIO GIS-NET: 1996 OBOR Investment Fund**

<b>University</b>	<b>Award 74.07%</b>	<b>Encumbrance Request</b>			<b>Available Balance</b>
		<b>1 12/96</b>	<b>2 4/97</b>	<b>3 5/97</b>	
<b>CSU</b>	\$160,000.00	\$36,834.50	\$26,254.14	\$0.00	\$96,911.36
<b>KSU</b>	\$69,629.63	\$56,072.72	\$0.00	\$0.00	\$13,556.91
<b>OSU</b>	\$61,481.48	\$9,874.00	\$20,606.12	\$0.00	\$31,001.36
<b>OU</b>	\$134,814.81	\$0.00	\$0.00	\$79,865.74	\$54,949.07
<b>UA</b>	\$122,222.22	\$0.00	\$99,030.40	\$0.00	\$23,191.82
<b>UC</b>	\$105,925.93	\$0.00	\$65,506.80	\$0.00	\$40,419.13
<b>UT</b>	\$54,074.07	\$51,036.80	\$0.00	\$0.00	\$3,037.27
<b>WSU</b>	\$85,185.19	\$62,788.06	\$0.00	\$0.00	\$22,397.13
<b>YSU</b>	\$66,666.67	\$0.00	\$0.00	\$55,932.72	\$10,733.95
<b>TOTAL</b>	\$860,000.00	\$216,606.08	\$211,397.46	\$135,798.46	\$296,198.00

Most of the equipment covered by the encumbrances has been acquired and installed. Thus, approximately two-thirds of the equipment and facilities have been put in place.

## **PRELIMINARY PLANS FOR ACTIVITIES FOR THE NEXT TWO YEARS**

The Ohio GIS Network has two task forces - one concerned with implementing the technical objectives of the network and another focused on research and policy objectives. Technical objectives include acquisition and installation of equipment, expansion of training within the network, development of data resources, and sharing of data and computing resources, expertise, and methods. The Technical Taskforce has been meeting quarterly since September, 1996. The Research and Policy Task Force has also met to initiate expansion of research collaborations. Activities of these two work groups are described below.

### **Technical Taskforce**

Official notice of the Investment Fund grant from the Ohio Board of Regents was received in the Summer of 1996. The Technical Taskforce has met five times to date. A sixth is scheduled for October, 1997 at Ohio University. The meetings to date are summarized below.

#### 1. September 1996 - at OBOR, Columbus.

- a) Established the proportional distribution of the Investment Fund grant and the procedures for disbursement of monies to the participants.
- b) Established general format and objectives of the workplan process and set a goal to have member workplans distributed by the next meeting.
- c) Decided to conduct surveys on each campus to determine possible support for a state-wide site license with ESRI (the vendors of the primary GIS software used in the Network).
- d) Decided to meet approximately every two-to-three months at the various campus sites in order to better learn about each others capabilities, activities, and interests.

#### 2. November 1996 - at University of Cincinnati.

- a) Discussed and decided to support a preliminary Investment Fund proposal from a Miami University-led initiative called OhioView, which would establish a distribution network for satellite imagery databases involving Ohio GIS-Net.
- b) Discussed possible collaborations with OhioLink, a university library network which is interested in providing greater electronic access to spatial databases
- c) Submitted workplans

3. January 1997 - at Ohio State University

- a) Discussed a variety of implementation issues, including possible ESRI training in Ohio, the ESRI state-wide university license, and equipment acquisition procedures;
- b) Ziona Austrian, the network coordinator for the Economic Research Database Network, led a discussion of the ES202 database and possible research collaborations. The members emphasized the need to automate the “cleaning” process for the database in order to make it as useful as possible.

4. March 1997 - at Cleveland State University.

- a) Investment fund acquisitions were summarized.
- b) Discussed implementation of the technical objectives of the Investment Fund grant.
- c) Discussed the status of the development of a statewide site license with ESRI. OhioLink contributed to these discussions.
- d) Tom Bier discussed the work of the Housing Policy Research Network.

5. June 1997 - at Wright State University.

- a) Discussed the equipment acquisition process and the ESRI statewide license.
- b) Duane Marble presented a summary of his application of GIS in student recruitment and retention planning at OSU.

The Taskforce is working on a plan to expand training opportunities within the network as well as for other colleges and universities in the State through the state-wide ESRI licence agreement. This training objective and the sharing of equipment, expertise, and methods can also be achieved through presentations on applications and other specific activities within the Network. The Taskforce plans to include such presentations at its meetings. Duane Marble made the initial presentation at the June meeting concerning his work with the OSU admissions office to use GIS methods for student recruitment.

The data sharing objective has been discussed in the context of the potential relationship with OhioLink and the need to identify priority databases. There is also a need to separately identify general purpose databases from specialized research data sets, and to use GIS as a spatial indexing method for data storage and access.

A preliminary web site has been mounted by OU and the Taskforce will developed it further.

## **Research & Policy Taskforce**

The Research and Policy Taskforce focuses on increasing the use of GIS in research and research collaborations, and to support the research of the other UUP networks. At its Summer 1997 meeting, the Taskforce discussed the three areas of research identified in the Ohio GIS-Net proposal to the OBOR Investment Fund - economic development, environment, and infrastructure. Members noted that some of the work already underway, including that of the Housing Research Network focusing on urban sprawl and land use development, incorporates issues of the environment and infrastructure.

The Taskforce discussed opportunities to find funding for research on urban sprawl, land use development, and farm land preservation. The Taskforce also discussed developing a collaboration among researchers on developing a framework that would enable the testing and application of economic forecasting and related models at different scales of geography and in different regions. There was consensus that the network has strength and interest in such a project. Randy Jackson agreed to write a brief proposal to the UUP Advisory Committee for a planning grant to organize a larger effort which would seek to obtain additional funding for the project.

The Taskforce also discussed a concept proposal to develop a "State of Ohio" report in anticipation of the year 2000. Such a report would include mapping of the State and much involvement of the GIS Network. Members agreed that the idea has merit because of its potentially high visibility. It should be a collaboration among all the UUP networks.

## **OUTCOME MEASURES**

It is planned that the outcome measures will include the following:

### **Efficiency and Synergy in Research Activity Through Collaborations**

- Number of PIs
- Number of joint proposals
- Dollar amount of jointly funded grants
- Number of joint publications
- Number of students jointly supervised, and/or aided in their research

### **National Excellence**

- Total funds leveraged
- Number of publications
- Number of presentations at national/international conferences

## **Impact on the Quality of Research-based Education**

- Number of Ph.D. students
- Number of masters degree students
- Number of undergraduates

## **Impact on the Economic Development of the State**

- Dollar amount of in-state grants and contracts
- Number of technical assistance projects
- Number of communities and public agencies assisted
- Case reports on larger public service projects aiding economic development in the State.

## **PROCESS FEEDBACK**

The earlier 1993 Investment Fund development grant to Ohio GIS-Net provided an incentive to further develop a strong GIS-based research capability at Ohio universities. It built the foundation for an expanded network through the 1996 Investment Fund. The nine-university Ohio GIS Network is now developing a strong research agenda that will contribute to proving that the Investment Fund program is a benefit to the State.

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## APPENDIX A

### Ohio GIS-Net

#### Research and Public Service Activities

#### Benefiting from 1993 Investment Fund Development Grant

(Selected List)

### I. RESEARCH AND EDUCATION

#### Publications

- "Toward Environmental Justice: Spatial Equity in Ohio and Cleveland", William Bowen, Mark Salling, Kingsley Haynes, and Ellen Cyran. Annals of the Association of American Geographers, Vol. 85, No. 4, 1995, pp. 641-663.
- "Using GIS to Make Parcel-Based Real Estate Decisions for Local Government: A Financial and Environmental Analysis of Residential Lot Redevelopment in a Cleveland Neighborhood", Robert Simons and Mark Salling. URISA Journal, Vol. 7, No. 1 (Spring), 1995, pp. 7- 19.
- "The Effect of Underground Storage Tanks on Residential Property Vales in Cuyahoga County, Ohio". R. Simons. Journal of Real Estate Research., 1995.
- "The Effect of Spatial Autocorrelation on Hedonic Modeling of Property Values", R. Simons, W. Bowen.
- "Urban Property Values, Percolation Theory and Fractal Geometry", Fractals, September, 1994.
- Planning Support Systems: A New Perspective on Computer-aided Planning. Richard E. Klosterman. Journal of Planning Education and Research In press.
- Loosely-coupled Modeling with GIS and a Spreadsheet. Richard E. Klosterman and Yichun Xie. International Planning Journal. In press.

- The Appropriateness of Geographic Information Systems for Regional Planning in the Developing World. Richard E. Klosterman. Computers, Environment and Urban Systems 19, 1 (1995): 1-13.
- Comment: Planning Support System and the New Logic of Computation. Richard E. Klosterman. Regional Development Dialogue 16, 1 (1995): 18-19.
- Loosely Coupled Modeling with GIS and an Electronic Spreadsheet. Richard E. Klosterman, In Toshiro Edamura, ed. Proceedings: International Workshop on the Application of Coms in Urban Planning. Kobe, Japan: Information Processing Center, Kobe, Japan, 1995.
- Editorial: International Support for Computers in Planning. Richard E. Klosterman. Environment and Planning B: Planning and Design. 21 (1994): 387-392.
- Guest Editor. Large-Scale Urban Models: Retrospect and Prospect. Richard E. Klosterman. Journal of the American Planning Association. 60 (1994): 3-44.
- Introduction, Large-Scale Urban Models: Retrospect and Prospect. Richard E. Klosterman. Journal of the American Planning Association. 60 (1994): 3-6.
- An Introduction to the Literature on Large-Scale Models. Richard E. Klosterman. Journal of the American Planning Association 60 (1994): 41-44.

### **Papers Presented**

- "Development of an Implementation Plan for Sharing Geographic Information in Greater Cleveland", presented to the Applied Geography Conference, Akron, Ohio. October 14, 1994.
- "Using GIS to Make Micro-Level Real Estate Decisions: A Financial and Environmental Analysis of Residential Lot Redevelopment in a Cleveland Neighborhood", with Robert Simons, presented at the annual conference of the Urban and Regional Information Systems Association, Milwaukee, WI. August 11, 1994.
- "Predicting the Course of Change in Property Values", presented at the Urban Affairs Association, May, 1995.
- A Collaborative Planning Support System. Richard E. Klosterman. Presented to the 38th Annual Conference of the Association of Collegiate Schools of Planning. Toronto, Ontario, July 1996.

- Loosely Coupled Modeling with GIS. Richard E. Klosterman. Presented to the International Workshop on Applications of Computers in Urban Planning. Kobe, Japan, November 1995.
- From GIS to Planning Support Systems. Richard E. Klosterman. Presented to the Kansai Branch of the Japanese Association of Planners. Osaka, Japan, November 1995.
- A Planning Support System for Teaching Land Use Planning. Richard E. Klosterman. Presented at the 37th Annual Conference of the Association of Collegiate Schools of Planning. Detroit, Michigan. October 1995.
- Workshop: GIS Resources for Planning. Richard E. Klosterman. 1995 Annual Conference of the Ohio Planning Conference, American Planning Association. Akron, Ohio, October 1995.
- Keynote Address. Richard E. Klosterman. Fourth International on Computers in Urban Planning and Urban Management. Melbourne Australia. July 1995.
- Planning Support Systems: A New Approach to Regional Analysis and Planning. Richard E. Klosterman. Presented to the Regional Research Institute, West Virginia University. Morgantown, WV, March 1995.
- Planning Support Systems: A New Perspective on Computer-aided Planning. Richard E. Klosterman. Presented to the 36th Annual Conference of the Association of Collegiate Schools of Planning. Tempe, AZ, November 1994.
- Information Needs in an Era of Financial Constraints. Richard E. Klosterman. Presented to the 16th Annual Applied Geography Conference. Akron, OH. October 1994.
- Planning Support Systems. Richard E. Klosterman. Presented to the 32nd Annual Conference of the Urban and Regional Information Systems Association. Milwaukee, WI. July 1994.

## **Grants**

- Community Development Block Grant Allocation Formula Analysis. \$25,000 grant from the Ohio Department of Development, Office of Community Services to OU and CSU.
- Development of Training Curriculum for Ohio's GIS Practitioners. \$36,000 grant from the Ohio Geographically Referenced Information Program and the Ohio Urban University Program to CSU and UC.

- Dayton Economic Development - Linking of GIS and the Internet to provide the City of Dayton, companies and developers with data and information that will impact the decision to locate or expand in the Dayton area. This project is a partnership between City of Dayton Economic Development, Ohio Department of Development and WSU.
- Election Precinct Mapping - Preparing for Redistricting in 2000. Funded by Ohio Legislative Services Commission. \$488,000 grant to CSU and OU.

## **Education**

### Theses and Exit Projects

"Urban Property Values, Percolation Theory and Fractal Geometry", Masters Thesis, Cleveland State University, June, 1994.

"Liquor Stores and Outlets and the Distribution of African Americans", Masters Exit Project, Cleveland State University, June, 1997.

Number of students working on GIS-facilitated research/TA projects: approximately 100.

Number of courses using GIS resources: approximately 25/year.

## **II. Public Service and Technical Assistance**

### **A. State-wide Public Service**

- Demographic Analyses Reports for the Ohio Board of Regents. Collaboration among all GIS-Net members.
- Community Development Block Grant Allocation Formula Analysis for the Ohio Department of Development, Office of Community Services. Collaboration among two GIS- Net members.
- Development of Training Curriculum for Ohio's GIS Practitioners. Collaboration among two GIS-Net members.
- Preparing Ohio for Elections in the 21st Century: Phase 1. Collaboration between two GIS- Net Members.

### **B. Regional/Local Technical Assistance**

- Development of GIS for the City of Stow.
- Development of GIS for the City of Barberton.
- Development of GIS for the City of Aurora.
- Development of GIS for St. Clair-Superior Community Organization
- GIS training for the City of Euclid.
- Tremont Neighborhood Redevelopment Analysis (City of Cleveland - Community Development Department)
- Cleveland Area Regional Environmental Planning In Action Network (CAREPLAN), an AmeriCORPS Environmental Service Learning Project.
- GIS/Mapping for Mill Creek regional sewer development project.
- GIS for Wellston, Ohio.
- Neighborhood Development Corp (NDC) - Mapping to geographically locate property owned by NDC's and FCDC's, Dayton area.
- Wellfield Protection Program - Created maps indicating jurisdiction and protection area boundaries.
- Greater Dayton Area Hospital Association - Mapped survey results and located respondents to closest street intersection to aide in analysis.
- Affordable Housing - Analysis of the factors that effect the location of housing vs. the location of individuals capable of affording the housing in the Dayton area.
- Dayton Economic Development - Linking of GIS and the Internet to provide the City of Dayton, companies and developers with data and information that will impact the decision to locate or expand in the Dayton area. This project is a partnership between City of Dayton Economic Development, Ohio Department of Development and CUPA at WSU.
- Columbiana County Land Use Plan
- Western Reserve Care System/Mahoning County Health Department Childhood Lead Poisoning Study

- Youngstown-Mahoning County Bicentennial Mahoning River Neighborhood Redevelopment Study
- Mahoning County Board of Elections Youngstown Ward Redistricting Project
- 7th District Ohio Court of Appeals Demographic and Case Load Analysis
- Mill Creek Metropolitan Park District Economic Impact Study
- St. Elizabeth Hospital Medical Center (Youngstown) Low Birth Weight Study
- YSU Center for Engineering Research and Technology Transfer Cambell Works Brownfield Redevelopment Project
- many miscellaneous mapping projects.