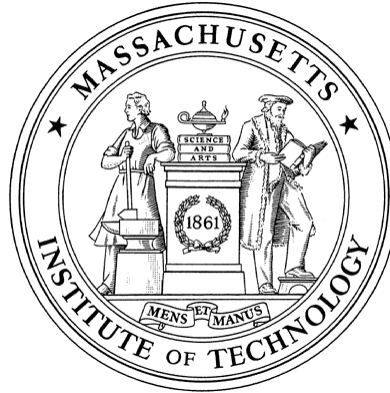


**Massachusetts Institute of Technology
Department of Urban Studies and Planning**



**11.204: Planning, Communications & Digital Media
Fall 2002**

**Lecture 8: GIS - A Tool for Representing Community
Lecture 9: GIS - A Tool for Mobilizing Community**

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I. What is a NIS?

Our focus will turn to the use of geographic information systems as planning tools that make conclusions about a community. The discussion will include a critical investigation of the way in which neighborhood indicator/information systems (NIS) store, manipulate, and communicate information via the World Wide Web. Cities with advanced systems, such as Los Angeles, Philadelphia, and Milwaukee will provide useful insights.

- A NIS is a single system for a city or region that integrates GIS and multimedia data sets
- It is a publicly accessible tool for visualizing and analyzing spatial information
- It is possible because of recent technical and institutional advancements

- Brief history: 1960s - Social Indicators; 1970s - Urban Indicators; 1990s - Monitoring Outcomes; Early Warning Systems

II. Why Are They Built?

- To assist with decision-making processes and policy formulation
- To democratize information and improve public participation
- To improve intergovernmental cooperation

III. How Do They Function? (*Some Examples*)

- **Philadelphia Neighborhood Information System (NIS)**
- Available to city agencies and non-profit groups
- ParcelBase - parcel level housing and real property data
- NeighborhoodBase - housing and related conditions for block groups, zip codes, etc.

The Cartographic Modeling Laboratory at the University of Pennsylvania joint venture between the Graduate School of Fine Arts and School of Social Work. It was founded in 1990 by a group of City and Regional Planning doctoral students and Dana Tomlin, Professor of Landscape Architecture. Dennis Culhane, Associate Professor at the School of Social Work, became involved in the CML in 1995 and is the investigator on most of the current CML projects including the Philadelphia Neighborhood Information System. The NIS is an interactive property and neighborhood information system that integrates data from eight city agencies, creating a database for housing and vacancy related research. Users can customize their own maps, tables and reports over the Internet. Researchers can access data to address housing-related policy questions.

- **Los Angeles Neighborhood Knowledge**
- **Milwaukee**
- **Other Countries:**
- **Nigeria and India** (*University of Iowa*) - to analyze the planning of health services and facilities.
- **Nepal** (*The University of Illinois at Urbana-Champaign*) - to analyze disparities in access to urban services.
- **Senegal** (*University of Wisconsin-Milwaukee*) - to employ a participatory process to select urban indicators using GIS.

IV. How Are They Built?

- **Determining Project Goals** (*What questions does the system seek to answer? What is housing abandonment?*)
- **Developing a Long-term Funding Strategy** (*PEW Charitable Trusts, William Penn Foundation, and the University of Pennsylvania*)

- **Establishing a Partnership Model** (*City of Philadelphia + University of Pennsylvania's CML. City agencies provide data and in-kind services of data processing staff and identify critical policy questions to address. University archives data, coordinates data exchange agreements, designs applications for end-users, hosts and maintains websites, and conducts research and policy analysis.*)
- **Implementing an Inclusive Planning Process** (*Face-to-face meetings with community development corporations*)
- **Identifying the Data**
- **Establishing Strong Working Relationships with Data Providers** (*A note on FOIA Vs Relationships*)

Board of Revision of Taxes - ownership, sales date/price, land and building characteristics (550,000 parcels)

Philadelphia City Planning Commission - citywide parcel coverage (six years old)

Department of Licenses and Inspections - code violations, demolitions, clean/seals

Water Department- shutoffs, suspended service, delinquency, vacancy

Office of Housing & Community Development - digital photographs (vacant lots/houses)

Philadelphia Gas Works - shutoffs, housing characteristics

Department of Revenue - property tax arrearages, lien sales

- **Refining Project Goals**
- **Evaluating Data Quality and Collection Procedures**
*Data are transported using different methods/formats (space delimited text files)
Elaborate and individual scrubbing routines*
- **Maintaining Strong Relationships**
*Changes in local administrations and staff
Updates every six months*
- **Determining Access (Levels)**
*ParcelBase = Limited to city agencies and approved non-profits
NeighborhoodBase = Publicly-accessible*

ParcelBase = Parcel-level housing and real property data covering the entire city

NeighborhoodBase = Area data by census tract, block group, zip code, council district, neighborhood and elementary school feeder areas

- **Designing Sensible (User-friendly) and Flexible (Geographic units) Applications**
*Functionality = Tables, Queries, Summary Statistics, Charts, Maps, Matrices and Neighborhood Profiles
Not as easy as it looks (HTML, ASP, VB, ArcIMS, etc.)*
- **Documenting Data Sources and Computation Methods**
Data dictionaries explain how the system manipulates data.

- **Creating Mechanisms for Ongoing Evaluation and Enhancements**
Regular data quality audits
Mobilizing communities to participate in neighborhood-based foot surveys

V. Next Generation NIS?

Web-based geographic information systems are not only a useful tool for displaying information, but are also an effective mechanism for enhancing public democratic involvement and obtaining feedback on alternative courses of action. This discussion will compare the Los Angeles, Philadelphia, and Milwaukee systems and consider how such systems are likely to evolve. *(If you have an interest in getting involved, think about taking 11.524 next spring.)*

- Goals
- Funding
- Partnership Models
- Data
- Access
- Interface
- Computation Methods
- Evaluation, Enhancements, Sustainability

VI. Academic Computing and MIT Libraries GIS Lecture Series for IAP 2003

- The Basics to Geographic Information Systems (GIS)
- Introduction to ArcGIS!
- Map Projections
- Locating Geographic Data : Finding the Needle in a Haystack
- The Good the Bad and Ugly : Determining and Creating Geographic Data Credentials (Metadata)
- Using MIT's Geodata Tool
- Mapping Address Locations: Introduction to Geocoding and Address Matching.
- Introduction to ArcGIS and DEMs
- Using a GIS for Decision Making
- Mapping Census Data : Using Geographic Information Systems (GIS) to Map Census Data

Updated October 2002 and November 2002 by Lorlene Hoyt. Part IV, system implementation, based on Philadelphia's NIS.

Created 25 April 2002 (lorlene) and based on telephone interviews with ML Wernecke, CML Managing Director; Amy Hillier, CML Research Associate, and Stephen Meyer, CML Database Administrator.