



Purpose, Organization and Benefits of the LOJIC GIS

Purpose. In a project summary written in 1987, “A Project to Meet Growing Community Needs,” the purpose and vision of the Louisville and Jefferson County Information Consortium (LOJIC) were summed up in the following statement:

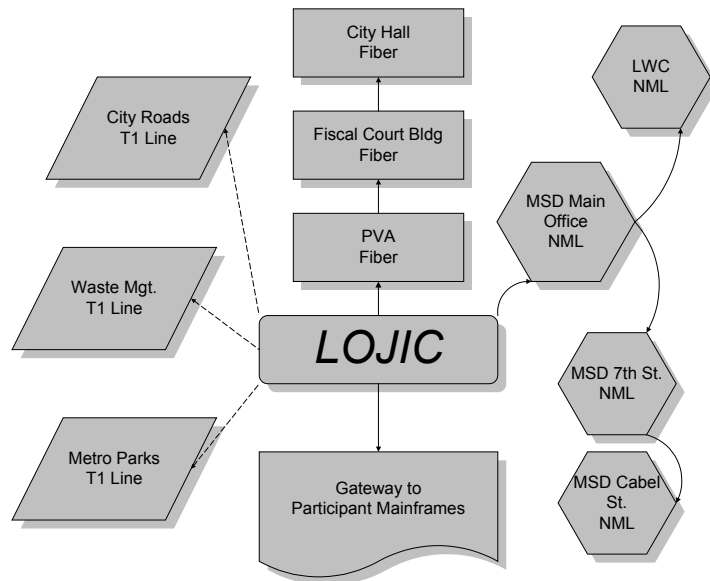
“Agencies operating throughout Jefferson County produced or modified more than 100 sets of maps annually at a cost that exceeded \$3 million. Most of these maps were used by more than one entity -- some by as many as five. The sheer volume of existing information was staggering and the quality and accuracy was not always reliable.

In 1985, PlanGraphics, Inc. was commissioned to study the feasibility and cost-effectiveness of a comprehensive Geographic Information System (GIS) for the City of Louisville, Jefferson County, the Metropolitan Sewer District, and the Property Valuation Administrator. A consortium was formed to implement the GIS and to facilitate the participation of other agencies and utilities.

Now government agencies, utilities, and organizations in the Louisville area have the opportunity to join in an active partnership that provides the most current geographic information available. The GIS will provide access to the maze of geographic and technical data generated and used by these groups. Through the GIS, custom maps and reports can be produced and complex analyses performed using the most current information available.”

Now in its 13th year, LOJIC has done just that. Participant agencies have incorporated the GIS into their daily work routines. LOJIC has established precedents and award winning projects in many functional and policy areas. In addition, LOJIC continues to respond to an increasing demand for its services and to tackle challenging and complex organizational and database issues.

Organization. There are currently over 30 user agencies among the five major participants of LOJIC, including agencies from the City of Louisville, Jefferson County Government, the Property Valuation Administrator (PVA), the Louisville Water Company (LWC) and the Metropolitan Sewer District (MSD), with MSD serving as the Project Management Agency for the consortium. Over 300 users throughout these agencies have been trained in the use of ESRI’s ArcInfo and ArcView software applications on the LOJIC GIS.

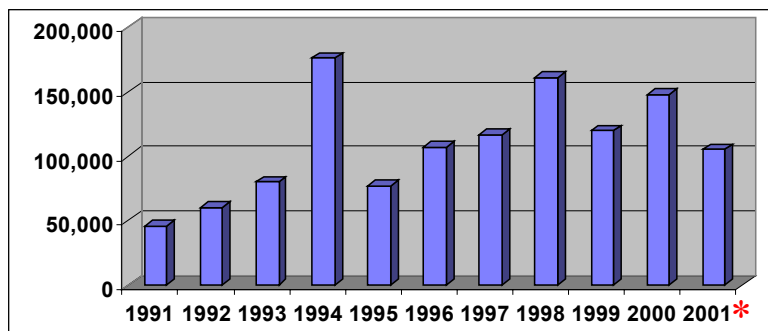


In addition to the five formal participants, license agreements have been implemented with a number of Jefferson County’s suburban cities, independent Fire Protection Districts and others to provide these groups with LOJIC data, training and technical support. A cooperative agreement also exists with the University of Louisville Center for GIS to provide access to the LOJIC database for research, training support and placement of student interns with various LOJIC user agencies. Cooperative demonstration projects and negotiations are also underway with the Louisville Gas & Electric Company, the Transit Authority of River City (TARC), Greater Louisville, Inc. (formerly the Louisville Chamber of Commerce), and the Kentucky/Indiana Regional Planning and Development Agency (KIPDA) toward similar partnership agreements to provide access to the LOJIC GIS. Ongoing discussions with other private sector businesses and data developers in the community continue to guide marketing and product direction.

A twelve person technical staff supports overall GIS activities across all LOJIC user agencies. This staff, housed at MSD offices, consists of five teams: database management, applications development, user support/training, products/services and system network support. Through an extensive LOJIC user support program (LUSP), the central LOJIC staff provide technical support and training necessary to guide the integration and use of the LOJIC GIS. LOJIC maintains an ongoing internship program through relationships with the University of Louisville, Indiana University Southeast, and the Geospatial Information & Technology Association (GITA). Students are placed in user agencies each semester and provide essential staffing support on many critical projects.

Benefits. While much of the early justification for the GIS was cast in the context of “cost savings over the long term,” LOJIC user agencies have promoted and realized significantly more tangible and intangible benefits in the areas of data cost recovery, elimination of data redundancy, data automation, interagency communication and coordinated systems development.

In an effort to lay the foundation for cost recovery, LOJIC management played a vital role in amending the Kentucky Open Records Law to allow cost recovery for GIS data and products. LOJIC staff served on committees that drafted revisions to the law in the 1990 and 1994 Kentucky General Assemblies. The first specifically allowed the sale of GIS products and data produced by public agencies. The second eliminated the special consideration of GIS data, and required that all data produced by public agencies be considered as records in the same way. This has broadened the cost recovery potential for public entities throughout the state.



LOJIC has recovered approximately \$1,700,000 over the past ten years through the sale of products and services. Digital map data, customized map products, orthophoto imagery and the Red Book Property Atlas are examples of such cost recovery generators. LOJIC is in the process of expanding its products and services list through development of

a generalized atlas, zoning maps, and direct online access license agreements. Policies are in place to coordinate product distribution and fee schedules among all participant agencies.

(* Does not include \$472,566 for LG&E License Agreement)

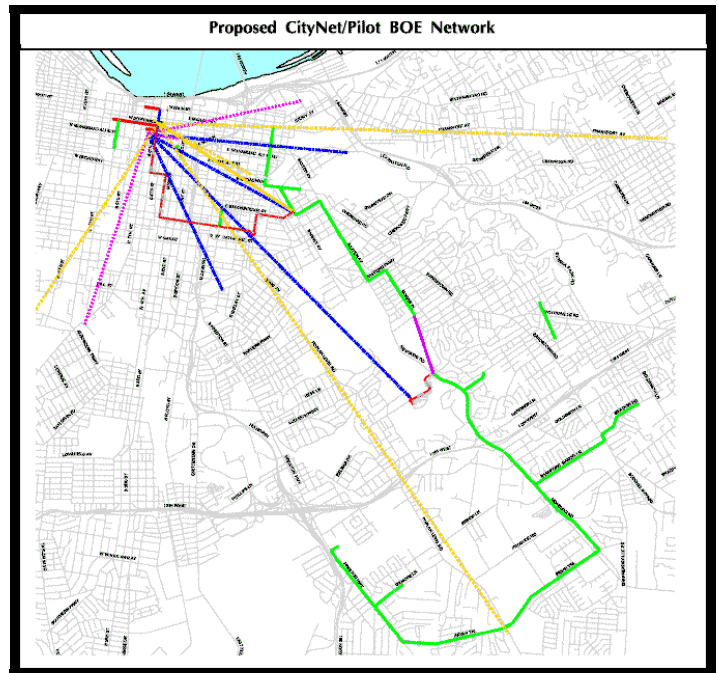
The most commonly identified benefit realized by LOJIC user agencies has been the elimination of redundant data sets, sharing a common geographic database and accepting responsibility for routine maintenance of their respective portions of the overall database. A good example of this is the current

effort among the public works and utility organizations within Jefferson County to share information on the location of maintenance and infrastructure improvement projects so that work may be tracked using the GIS. Another example of how this has benefited the community involves engineers and developers who acquire digital mapping. Use of LOJIC data from the onset of a project will enable digital submission of subdivision plans and record plats which has facilitated development review and will allow us to evaluate innovative options for long term change detection for base map updates.

Probably the most important effort to eliminate redundant data has come as a result of the development of a master address file. In 1994, LOJIC began a project to establish and maintain a correct address and tax block and lot number for every parcel in Jefferson County. The goal of this effort was to create a county-wide site address coverage for use in geocoding. The project established coherence among the GIS property database, the core database for the city's Land Management Information System (LMIS), and the Real Estate Master File (REMF) which is the core database for all property data maintained by the PVA. The project has assigned a verified address and tax block and lot number to all of the nearly 285,000 parcels in Jefferson County. Procedures have been established through local ordinances for assigning and maintaining official addresses, both as site addresses and street block ranges, by the Jefferson County Division of Planning and Development Services (DPDS) using the LOJIC GIS. The availability of reliable, centrally maintained address data has resulted in a dramatic increase in the demand for LOJIC applications across all user agencies, and has allowed the LOJIC GIS to be the primary data source for local E911 and Computer Aided Dispatch (CAD) operations. In addition, MSD and many other agencies have begun the process of standardizing their various internal address files against the authoritative address database on LOJIC.

Of particular benefit, both to members of the LOJIC consortium and to the community at-large, is the increased cooperation and communication among governmental agencies, especially in the area of network and systems development. Because of the success of the LOJIC consortium, initiatives have begun over the last two years to develop a joint fiber optic network connecting the agencies of city, county and state government and the office sites of MSD, Louisville Water Company, and some schools within the urban area.

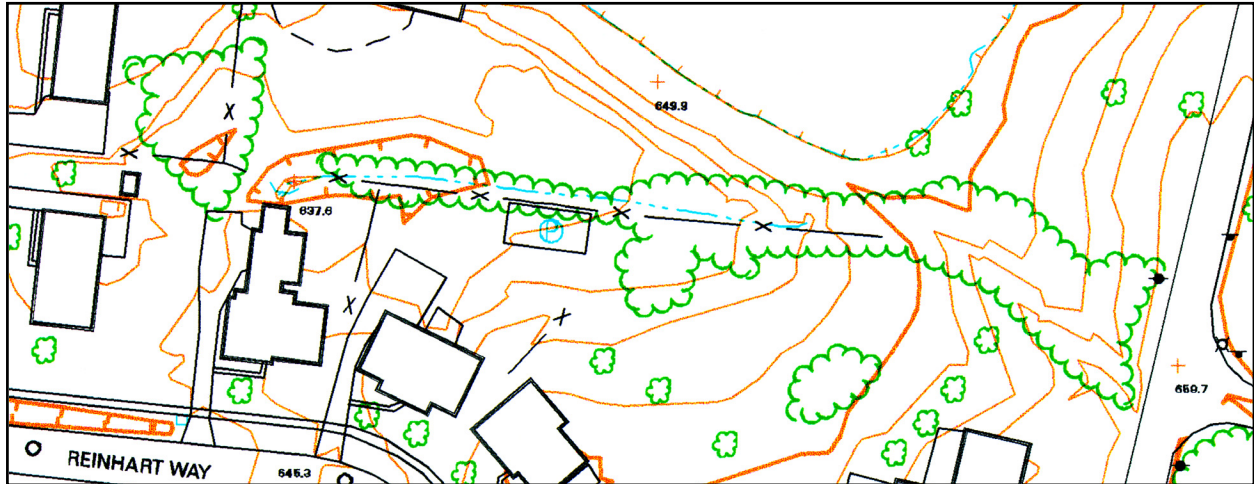
CityNet will save taxpayers hundreds of thousands of dollars and increase the level of technology utilization and data sharing among these various public and private entities. Connection to the Insight Cable's fiber network is also being investigated to promote Supervisory Control and Data Acquisition (SCADA) operations, and expand the overall LOJIC network to additional remote sites.



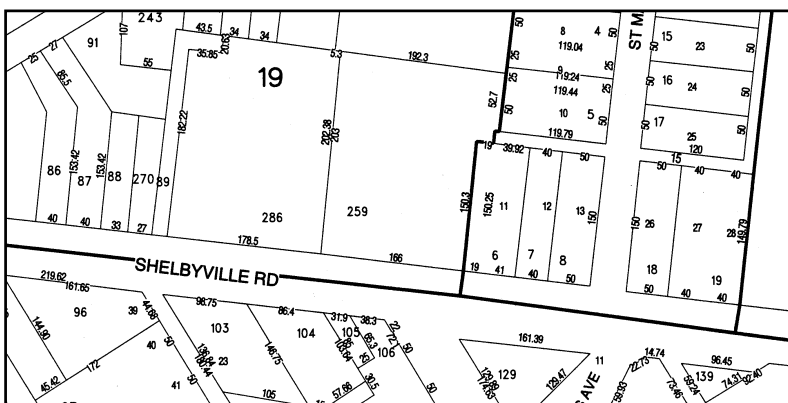
Spatial Databases within the LOJIC GIS

Over the last 13 years, the LOJIC system has grown through an initial network configuration based on a PRIME central mini-computer to a distributed architecture based on SUN servers and workstations. There are 93 SUN workstations and hundreds of PC's among user agencies that directly access data and

applications in the LOJIC GIS. LOJIC runs the latest version of ESRI ArcInfo software, and maintains approximately 60 gigabytes of data that includes a LIBRARIAN database of county-wide base and thematic mapping, and redundant ArcStorm databases for property and street centerline layers on two primary servers connected via a dedicated fiber optic network. T1 lines serve several remote locations. System expansion currently involves some new ArcInfo workstation installations, but the user emphasis has shifted from workstation to PC ArcView installations.



LOJIC has built a detailed county-wide photogrammetrically compiled planimetric and topographic (PTD) base map that contains over 100 features in 22 different data layers, and meets National Map Accuracy Standards for 1"=100' mapping (+/-2.5 ft. horizontal; +/- 1 ft. vertical). The PTD, originally compiled in 1988-90 and updated in 1993 and 1998, serves as a reference database for many other data conversion efforts. LOJIC is developing internal procedures for the routine updating of the PTD through the use of digital orthophoto imagery.



A countywide property layer containing over 285,000 parcels, detailed annotation, and tax block boundaries is maintained daily by the PVA. This database has been converted to an ArcStorm database for faster processing in the edit application and to accommodate multiple data editors working on the database. Historical lot lines are archived, and retained for reference, on a separate layer.



Since 1996, LOJIC has produced high-resolution orthophoto imagery from annual aerial photography of Jefferson County rectified to the PTD mapping. The digital orthophoto imagery was originally created from 1"=660' panchromatic photos acquired in Spring 1996 and 1997. Imagery was again updated using 1"=800' color aerial photography acquired in Spring 1998.

LOJIC is currently creating digital orthophoto imagery from its color Spring 2000 aerial photography. Digital imagery is accessible on-line via the LOJIC GIS and serves as background data to support a wide range of internal projects and as a future source for updating PTD mapping.

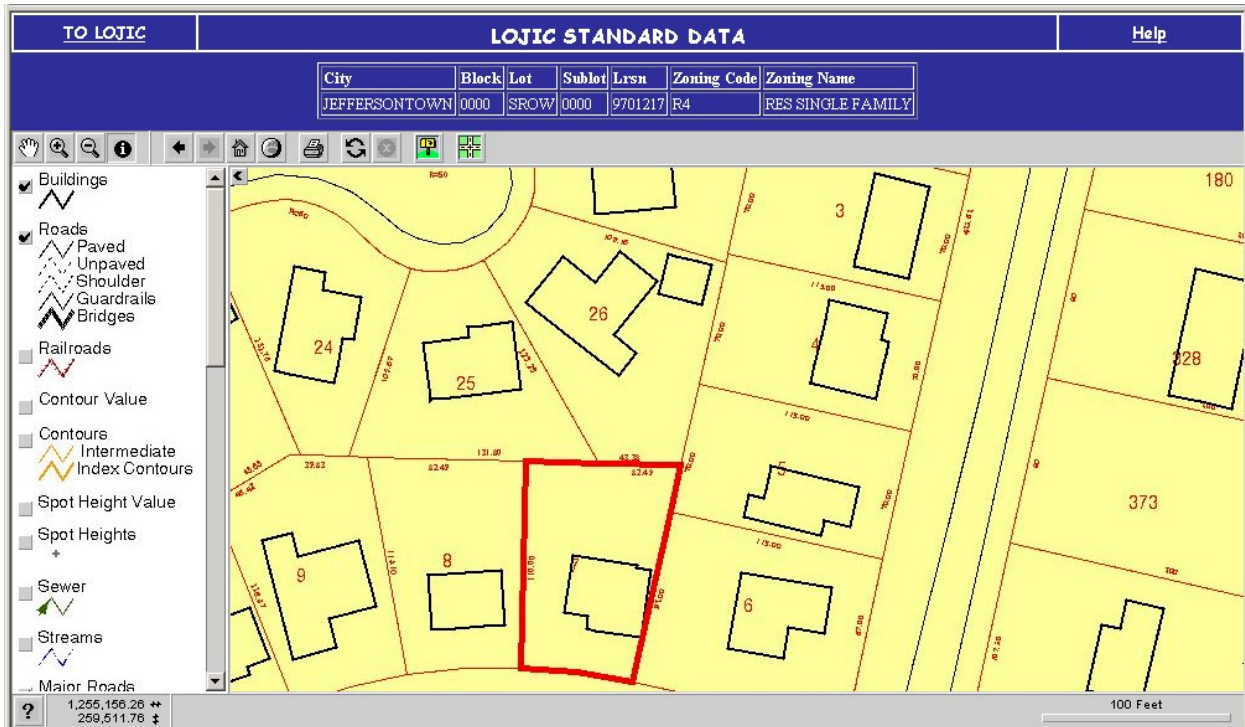
The following chart details some of the data layers and the agency that maintains it. The reference grid systems and some of the less significant thematic layers are not detailed here.

Planimetric & Topographic Base Map	LOJIC
Property Database	PVA
Sewer Facilities	MSD
Street Centerline/Address Ranges	DPDS
Site Addresses	DPDS
Flood Insurance Rate Maps	MSD
Precincts	Board of Elections
Municipal Boundaries	DPDS
Digital Ortho Imagery	LOJIC
Political Districts including commissioner, aldermanic, and legislative districts	Board of Elections
City Police Districts	City Police
County Police Districts	County Police
City & Co. Neighborhoods	City Public Works & DPDS
Emergency Management Service Districts	Emergency Management
Parks & Greenways	Parks

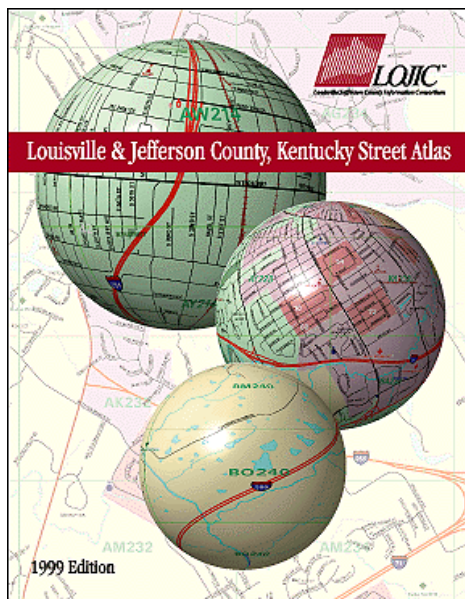
Historic Districts	City Public Works
Census Tracts/Block Groups	LOJIC
MSD Service Areas	MSD
Watersheds	MSD
Combined Sewer Lines & Outfall Points	MSD
Soils	LOJIC
Zoning	DPDS
Land Use	DPDS
City Sanitation Districts	Waste Management
Snow Removal Routes	Public Works
Empowerment Zone	DPDS
Fire Hydrants	LOJIC/LWC
Floodwall	MSD
Subdivisions	DPDS
Urban Renewal Areas	City Public Works
Olmsted Parks	Metro Parks

LOJIC GIS via the Internet

LOJIC maintains a robust Internet web site (www.lojic.org) that is a source of much information about the consortium, data sources, applications and training opportunities. The Internet is a rapidly growing platform for providing LOJIC GIS capabilities to the public and private sectors. The LOJIC web site already includes several simple on-line applications to allow map data browsing, polling locations and contact information elected officials. PVA and LOJIC collaborated in developing a subscription web site to allow on-line query of detailed property information, photo images and property maps.



LOJIC Street Atlas



Having a wealth of geographic data available from a PC in an office or at home via the Internet allows for some very powerful, effective spatial analysis and map production. There are situations when sets of hardcopy maps are just as effective and easier to use. In 1999, LOJIC users from LWC, EMA, City/County Public Works and MSD collaborated on the design and publication of its first LOJIC Street Atlas. The Atlas includes up to date street maps, parks, hospitals, schools, government facilities, police/fire districts and other points of interest in Jefferson County. It also includes a detailed street-to-map reference. The Atlas was first produced to meet the in-house needs of LOJIC user agencies, but may prove to be a valuable resource for businesses and the public. The 2002 atlas includes even more information.

Development Plan Review/Permitting System

Building on the successes and information infrastructure of the LOJIC partnership, City/County agencies and MSD are laying the foundation for implementing a unified system for development plan review and permitting. This new system, to be integrated with the LOJIC GIS, will automate and track all aspects of our community's myriad processes for submittal and review of development plans and issuing permits. The system will be a common tool shared among over 30 departments of local government. Participants in the project are currently involved in cooperatively defining specific user requirements, assessing hardware/software needs and reviewing departmental business processes. The new plan review and permitting system, to be implemented in several phases, is scheduled for completion by 2003.

Notable Achievements and Benefits to the Consortium

LOJIC received an award for **Outstanding Internet GIS Application** at the 2000 ESRI User Conference for its *Voter Connection* tool that provides information on polling locations and contacts for elected officials via the Internet.

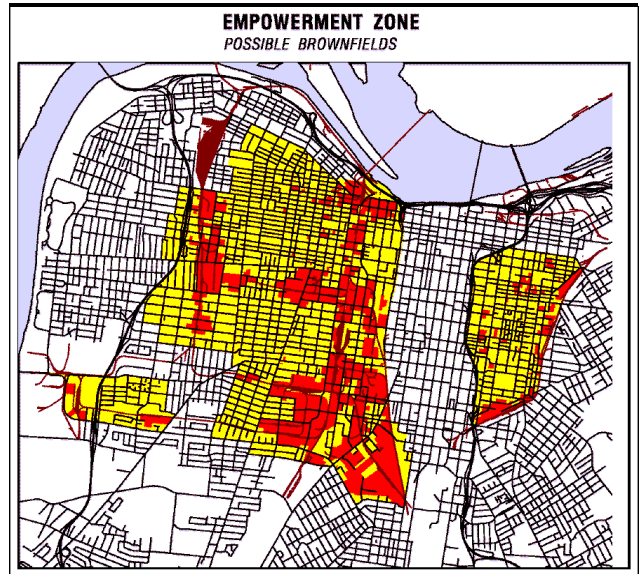
LOJIC received an award for **Special Achievement in GIS** at the 1998 ESRI User Conference in recognition of the efforts of the partnership in using GIS to meet local needs.

LOJIC received the **AM/FM International Excellence Award** in 1996. This award recognizes user organizations for outstanding application of Automated Mapping/Facilities Management GIS technology.

E911 and CAD Support has been a major focus for LOJIC and local emergency services staff over the past several years. All spatial data necessary for local E911 response, including emergency service (Police/Fire/EMS) districts, addresses (sites and ranges), transportation networks and political jurisdictions are automatically derived from and maintained on the LOJIC GIS. All digital map data used as reference and on-screen display in the local CAD system originates from the LOJIC GIS.

Response to the March 1997 flood was largely coordinated through the use of information and resources from the LOJIC GIS. Over 3,000 sets of maps were generated from LOJIC over the two weeks immediately following the flood for a wide range of uses by local stormwater management teams, emergency response agencies, public works, elected officials, local news media and many other local/state/federal agencies. The LOJIC GIS was used to provide maps and data necessary for evacuation efforts, damage assessments, rainfall/flood modeling and monitoring ongoing public requests for assistance during the flood emergency. The capabilities of the LOJIC GIS were severely tested and demonstrated during the flood emergency, but the system drew praise as an invaluable resource from all.

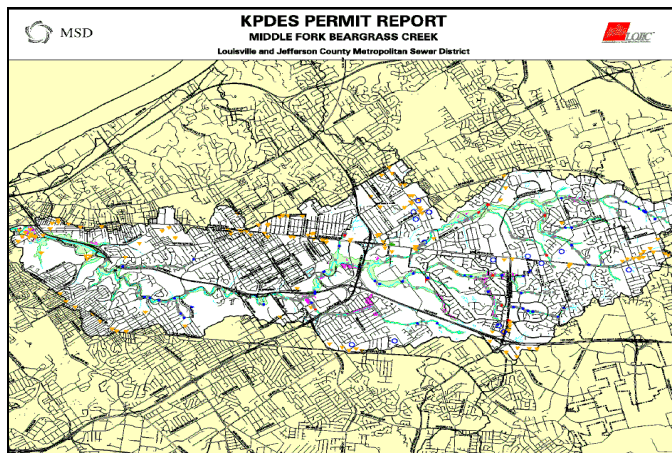
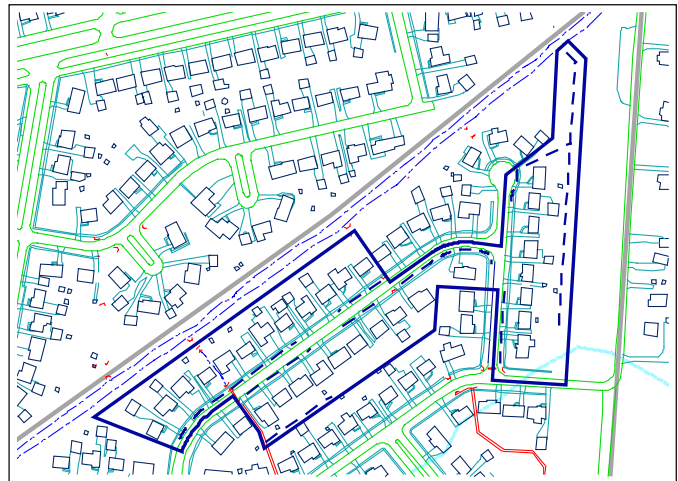
The Brownfields Inventory Project is an ArcView application based on an inventory of more than 20,000 properties in the urban core of Louisville. The application was developed at the direction of the Mayor for use by his staff, economic development officials, and the general public and neighborhood organizations. The inventory helps target sites for redevelopment, which may have a history of environmental contamination. The project won the 1995 American City and County Award of Merit for Information Systems.



The **Address Coding Guide for Municipalities** was created for use by insurance companies in conjunction with the 96 municipalities within Jefferson County in order to verify the location of properties and the distribution of revenues. The Guide is also used by municipal governments as an accurate source of verifying addresses within their boundaries in order to improve service delivery.

The **Red Book Property Atlas** is a 2000 page atlas of current graphic property data. This product, produced jointly by the PVA and LOJIC staff, has been sold to nearly 150 users throughout Jefferson County and the nation. The atlas is updated once a year, through an application which automatically generates new 11"x17" standard maps of mapsheets.

Neighborhood Area Studies were undertaken in 36 areas of Jefferson County by MSD's Stormwater Planning Department to assess drainage problems and complaints, and to determine proposed solutions. Each of the neighborhood's drainage systems were mapped by interns and data was collected and entered into a database. ArcView themes were developed, and various types of output designed for use in public meetings and as field mapping for detailed follow up work. The manuscript maps produced by the interns will provide detailed source documents for the drainage facilities conversion project soon to get underway.

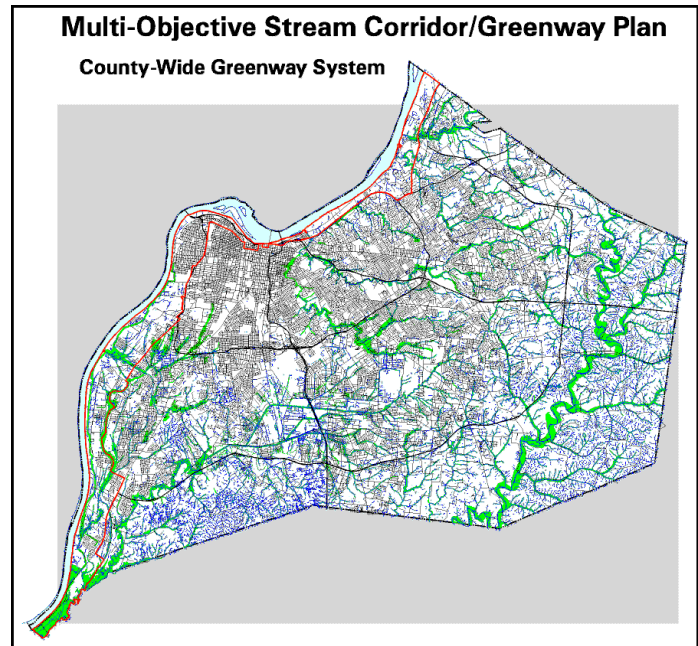


Federal KPDES Permitting Requirements for Louisville and Jefferson County are being met utilizing the LOJIC GIS. The GIS has proven to be a useful tool in mapping and tracking pollution within watersheds. In utilizing this approach, MSD has begun an innovative management process for improving water quality in all areas of the county. Data from several different databases was combined in the GIS to locate permitted industries and discharge locations. In addition, teams of high school students work every summer on

monitoring all combined sewer outfall points. MSD submits a permit application each year to the state that summarizes data collection, monitoring activities, and improvements to water quality within the watershed.

Cornerstone 2020 is a large scale, community-based effort aimed at revising Jefferson County's Comprehensive Plan. The overall project is made up of twenty working groups that are making recommendations for different aspects of community development. The Greenways Committee used the GIS extensively to help understand the inter-relationships between land use, soil erosion, development, and natural resources. Their work has resulted in new ordinances directed at controlling development in high risk areas, and enforcing buffer zones around sensitive stream corridors.

System and network integration has become a focal priority of LOJIC users and technical staff. This last year, LOJIC successfully established data exchange procedures with the City of Louisville Office of Information Systems and the Property Valuation Administrator's Office. These protocols and procedures result in the nightly or weekly exchange of critical data from mainframe systems to the GIS. In addition, prompted by the sewer facilities conversion project, there now exists a seamless and dynamic connection between LOJIC and the Metropolitan Sewer District's Oracle server that manages the Hansen Infrastructure Management System, the Industrial Waste Information System and the TRIMCO Imaging System.



Metadata and system documentation are now available on-line in PDF format to all LOJIC users. This documentation is patterned after the National Spatial Data Standard, and provides consistent and highly detailed information about the standards and database design used to create and maintain each dataset, as well as who to contact for additional information. The documentation provides a summary of the dataset, the data template, and has hypertext links to sample graphics for a visual example.

Applications currently being utilized by LOJIC Participant Agencies.

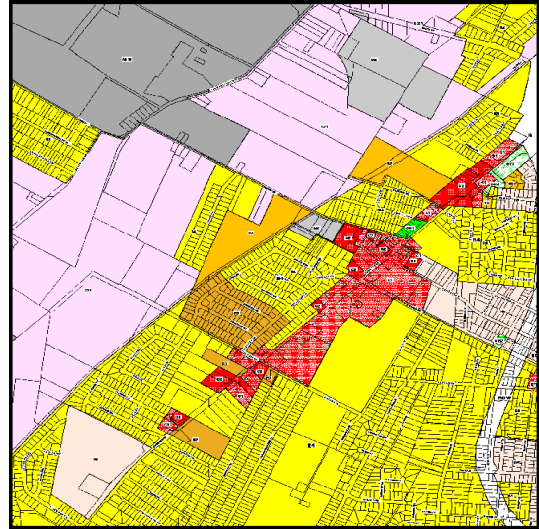
Several applications have been written by technical staff for use by users **throughout the consortium**. These applications ease query, plotting and database development for users who are not command-line ARC/INFO programmers.

- The **Generic Query Interface (GQI)** is a generic query and display application that provides many of the easy to use, theme based geo-processing tools that ArcView provides, but runs on top of an ARC/INFO engine. GQI provides a powerful interface to high level ARC/INFO functionality such as geo-coding, routing, and path finding. The software is easily modified and is used commonly as a basis for custom user applications.
- The **Products Application** is a GQI-based application designed to track the sale and production of available LOJIC products. These products include standard plan and topo maps, user requested custom maps using numerous data features beyond basic PTD data, digital imagery and digital data in various formats for use on other platforms (such as DXF data for AutoCAD users). The primary value of the application is to quickly produce and record mapping products, saving time for LOJIC customers and staff.

- **Quality Control Routines (QCR)** provide standard quality control checking and reporting of database validity. The application can be modified based on different verification standards for each dataset. It is easy to use, and provides report output of errors and anomalies. Use of this application is required for all database development activities.

The **Louisville and Jefferson County DPDS** has made remarkable progress in incorporating the GIS as a tool in their daily work. In addition, mapping staff has assumed responsibility for maintenance of specific data sets and graphic data layers.

- The DPDS is responsible for the **creation and maintenance of the zoning and subdivision layers** in LOJIC. Both of these datasets are based on attribute data stored in the City's Land Management Information System, and updated quarterly by staff. The DPDS keeps a set of zoning maps on their public service counter for reference use. They also created the land use layer that is a valuable component of the economic development community.

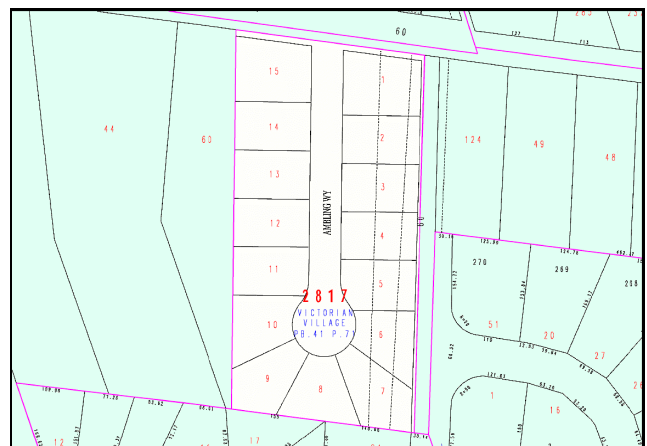


- The **Street Centerline Editor** was written for City Public Works and the Jefferson County DPDS. The application is a customized version of the data editor application that is a user-friendly interface for ArcEdit. The application is used to maintain site addresses, street centerlines and address ranges and allows for multiple users to edit the coverages. The application verifies the street name to keep the centerline and address coverages as accurate as possible. Quality control routines are built into the application to identify any errors that were created during the editing process.

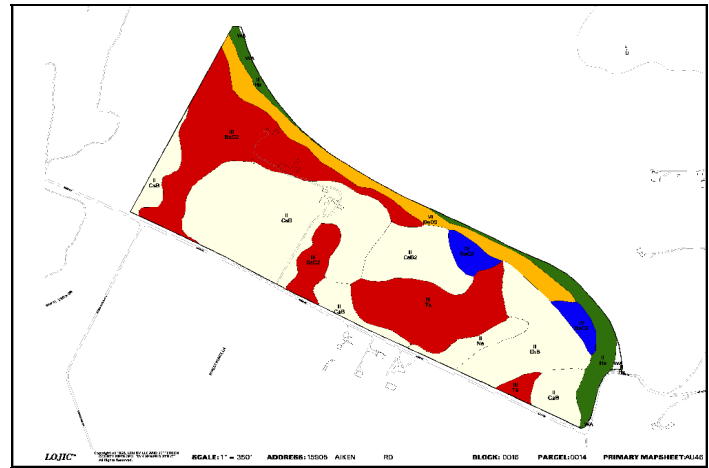
The **Property Valuation Administrator (PVA)** maintains the attribute and graphic property database using the LOJIC GIS, including all property transfers, subdivisions and consolidations on a real-time basis. PVA staff use a complex edit application to maintain the property data, while the public and other LOJIC users can query property data through a simplified public access application.

- The **PVA Parcel Edit Application** was designed and written by LOJIC staff for use by PVA in maintaining and updating the parcel database. The application provides PVA with easy to use tools that perform typical parcel maintenance and update functions, such as parcel splits and mergers and new subdivision inserts. In addition, the application tracks property lineage by recording changes to parcel ID numbers.

- Both **Block Plot and Autoplot Applications** are used as tools to produce parcel plots of any desired tax block. The Block Plot application is a graphical interface that allows the user to produce seven distinct plot formats. Autoplot is initiated automatically on a weekly basis to produce plots of tax blocks whenever a change or edit is made to the block. The public references these maps whenever they are in the office gathering information.

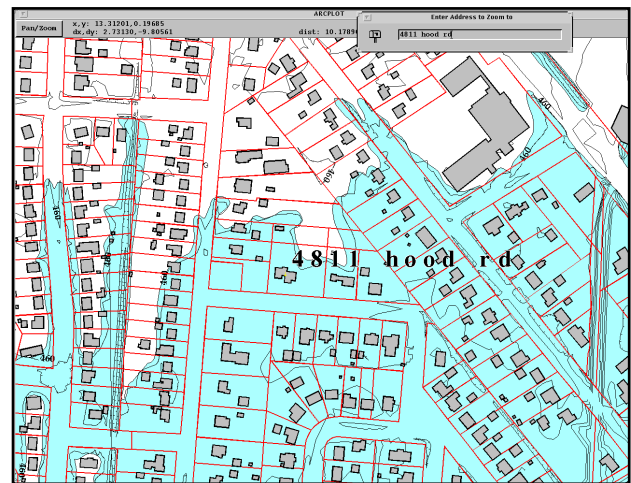


- The ***PVA Public Access Application*** was designed and written by LOJIC to provide the public with graphic and attribute information about assessed properties in Jefferson County. The product is located at the front counter of the PVA's office and will eventually replace the terminals that display only text and the hardcopy maps as well. The application uses a customized ArcView interface and was written entirely in Avenue scripts.
- ***Property Reassessment*** efforts during the last two years have utilized LOJIC for annual appraisal and selective appraisal of agricultural lands and for resolving disputes related to the proposed valuation. According to the PVA, the use of LOJIC was responsible for reducing controversial cases from over 10,000 in 1994, to less than 100 in 1995.



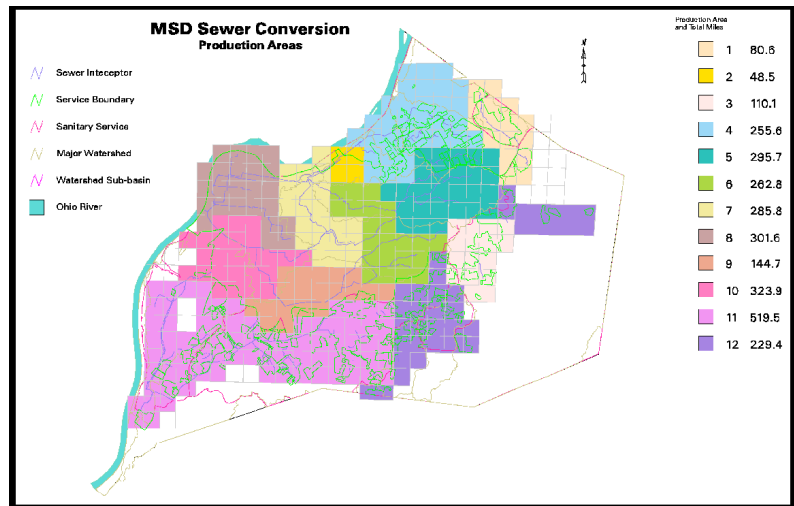
The **Metropolitan Sewer District** has one of the most aggressive user programs among the consortium participants. Staff in seven different departments has been trained in the use of LOJIC. Several major applications have been written for use by untrained staff, furthering the daily use of the system. In addition, MSD has taken a strong position in outsourcing application development to external engineering and consulting firms. This has helped grow local GIS capabilities within the community, and expanded the overall user base of LOJIC.

- The ***Stormwater Revenue Impervious Area Measurement System (SRIAMS)*** is a semi-automated application designed to measure impervious surfaces on commercial and industrial parcels within MSD's Drainage Service Area. The application is designed to assist MSD Revenue staff in assessing accurate drainage fees for commercial and industrial properties. The application was developed by Skees Engineering of Louisville.
- The ***Flood Determination Application*** is used by the MSD Stormwater Division to respond the nearly 300 weekly requests from the public for floodplain determinations as a means of verifying the need for flood insurance. This application is a menu-driven tool that allows rapid determination of a given property's proximity to the floodplain, generation of a letter of reply and a reference map that are provided to the property owner.
- The ***Drainage Complaint Work Order Map*** application allows a user to identify a parcel by address, owner, or parcel ID number; displays ownership and political district information about that property from two different databases; and then allows the user to select one of three graphic outputs in standard 11"x17" format showing the parcel centered in plan and topo base data, floodplain data, or at a larger scale for field work and notation.



- The MSD **Board Map application** is a graphical interface that is used to produce an 8 1/2"x 11" map used for presentation in all capital and mini-project Board packages. The application allows the user to enter project and management information and select a pre-set scale. It also allows the user to select overlays from a list of 23 different PTD layers.

- LOJIC staff developed the **Sewer Conversion Production Area Selection** application, which was used to define production areas based on the calculated length of street centerlines, intersected with the MSD service area boundary, and overlaid with the MSD sewer atlas grid. This application simplified production area definition, and facilitated amazingly accurate conversion mileage calculations.



- The **Sewer Facilities Conversion Project** outsourced development of query, maintenance and map generation applications specifically designed to take advantage of the dynamic linkage inherent in the IMS/GIS data model used in the sewer conversion project. Hansen Information Technologies designed IMSARC, their commercial GIS application product, directly from specifications generated from the sewer conversion requirements.

- The **Customer Response System (CRS)** is an ArcView application used primarily by MSD Customer Service staff to query, display and report status of service requests and generate standard maps of specific problem sites. Users may query by address, property owner name, service request number and status to provide reference information for customer calls. The CRS also contains detailed databases of current/planned MSD projects that may be reported by political and administrative districts.

- The **Political Reporting Application**, a menu-driven ArcInfo application, creates maps and charts about complaints received by MSD within political districts in Jefferson County. This maps and chart as well as letters are sent to the political representative of these districts on a quarterly basis, keeping them informed about possible problems in their district in a meaningful and easy to understand way.

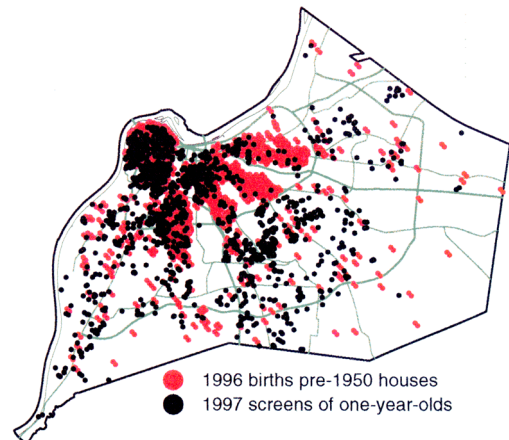


It is impossible to highlight all the applications and uses of GIS throughout the LOJIC consortium in this application. We would like to acknowledge, though, several additional agencies that are using the GIS to accomplish integral functions within their departments. Of particular note are:

- **Louisville Public Works Department** that has been a long time user of LOJIC, and maintains applications programming staff that support mapping functions in many city departments. Public Works also maintains the city portion of many datasets. Their pavement management system and innovative

applications that integrate images and complex analysis into routing, intersection signalization and facilities management set an example for the city agencies that they support. Public Works programming staff wrote the IPLADD application for the Inspections, Permits and Licensing Department that helps track parcels that are currently undergoing change or redevelopment.

- The **Jefferson County Board of Elections** has become a robust GIS user agency and aggressively incorporated use of the GIS into their routine functions, and has taken over maintenance of all political district boundaries. The agency currently works with the Legislative Research Commission and the State Board of Elections to define and maintain coherent precinct and district boundaries among the agencies. In addition, all precinct maps are currently plotted off LOJIC and made available to the public and political candidates. LOJIC maps are used in pre-election advertising for polling station locations. The Board of Elections recently deployed an Internet GIS application that allows public queries by address to determine polling locations and summaries of elected officials.
- **County Police** have created their police districts and beats using ArcView and routinely maintain the boundaries for verification. They are using geocoding to depict problem areas for crime and plan to use the charting and layout capabilities of ArcView to produce monthly reports of crime statistics and have used the system to find the street mileage within each beat in their districts.
- The **City Police** plan to use the system in their radio room to help locate calls for dispatch. They also use GIS to geocode and map incidents as part of their crime analysis strategy. They are currently standardizing street names in their database to increase the match rate for their incident maps. The standardized street names will correspond to the Street Index File.
- **Emergency Management Agency** uses the LOJIC GIS to model emergency response and evacuation scenarios, target hazardous facilities, and analyze coverage areas for emergency sirens. They are cooperating with FEMA toward using LOJIC to develop earthquake and storm response models and have received federal funds to support their Community Emergency Response planning.
- **County Division of Environmental Health and Protection**, a partnership of the County Health Department and the Department of Planning and Environmental Management, is using ArcView and ArcExplorer to provide geographic information to their staff for analysis of possible health and environmental risk factors. They have used ArcView to find areas in Jefferson County that need increased lead screening by determining a relationship between the number of young children who have been screened for blood lead and the age of the house in which they live. County Health received a \$1.5 million grant to expand the scope of this research.



Sharing AM/FM/GIS Experience and Knowledge

The Metropolitan Sewer District, serving as Project Management Agency of LOJIC maintains a User Affiliate membership in GITA. In addition, LOJIC management staff has utilized the services of GITA to network with technology and conversion vendors in order to keep up with latest trends. As mentioned earlier, LOJIC welcomes participation by GITA interns on a yearly basis.

LOJIC has hosted the Indiana/Ohio/Kentucky (IKO) Chapter of GITA Regional Conference, and taken substantial responsibility for program development and presentation in past years. At a recent IKO Regional Conference hosted in Louisville, MSD demonstrated the Hansen IMSARC application and sewer facilities conversion project in the exhibit hall.

LOJIC served as host for the Kentucky GIS Conference, held in conjunction with the annual meeting of the regional American Public Works Association annual conference, and that of the Southeast Roads

Association Annual Transportation Conference. Nearly 1,000 attended this conference, the theme of which was “***Managing Assets Through Integrated Technology***”, and focused primarily on the implementation and integration of GIS technologies in public works, utility and transportation industries.

LOJIC sponsors the Jefferson County Public Schools through the ESRI K-12 program. Several schools have ArcView and LOJIC data in their computer labs and are integrating its se into existing curriculum. LOJIC staff routinely visits public and private schools to share information about maps and geographic data. LOJIC participates in the School to Work program, a program that brings teachers into the workplace where they experience real world job opportunities to take back to their students.

LOJIC recognizes its significant obligation to share its expertise with other cities, utilities and government agencies through participation in many organizations and committees focused on GIS, technology transfer, and work processes. LOJIC gains immeasurably from the networking that forms as a result of these contacts and presentations.

- Bruce Seigle, LOJIC Manager, was appointed by the Governor to represent the engineering community on the ***Kentucky Geographic Information Advisory Council***.
- Curt Bynum, LOJIC GIS Coordinator, sits on the ***GIS Data Standards Committee, State Metadata Subcommittee*** and chaired the ***KIPDA Regional GIS Committee***.
- Gordon Garner, MSD Executive Director and LOJIC Policy Chair, and Rosanne Kruzich, LOJIC Consultant, participated in formulating the policy and strategy for NSDI and SDTS through the ***FGDC Municipal and Local Government Task Force***.
- Bruce Seigle represents LOJIC in the ***Strategic Planning Task Force for the Louisville and Jefferson County Economic Development Partnership***.
- Gordon Garner and Bruce Seigle routinely meet with the ***Five Cities Consortium*** to evaluate technology utilization and work processes. Representatives from five of the larger cities in this region, including Columbus, OH; Indianapolis, IN; St. Louis, MO; and Cincinnati, OH, as well as Louisville, KY share their expertise in this forum.
- Bruce Seigle participates in the ***Development Review Task Force for the Cornerstone 2020 Comprehensive Plan***.
- Jane Poole serves on the ***Community Data Partnership***, a local partnership to improve community conditions through the collection, interpretation and dissemination of data.

In addition, LOJIC routinely hosts staff and/or fields questions from municipalities throughout the country, and occasionally international visitors, who wish to see a successful GIS implementation. Recent visits have included staff from:

- Brookings Institute
- Bowling Green, KY Planning Commission
- An entrepreneur from Belarus through the Louisville International Cultural Center, Business for Russia program.
- Public Agencies from Harrison, IN
- Representatives from Mecklenburg County, NC
- A delegation from Central & South America and the Ivory Coast
- Philadelphia, PA Public Works Department
- Montgomery, AL Public Works Department
- Indianapolis, IN staff from Public Works, Information Systems and Finance
- City of Sacramento, CA Wastewater and Stormwater staff

- Industrial Economics, Inc., EPA, and New Castle, DL regarding the Brownfields Project
- Delegation from Bolivia to discuss property conversion
- Governmental staff from Saudi Arabia
- Deputy Minister, Department of the Interior, for Argentina
- Public Works/Environmental Planning, Warnambool, Victoria, Australia
- Northwest Louisiana Council of Governments, Shreveport/Caddo Parrish

Industry leaders recognize LOJIC as one of the most robust and highly successful GIS systems in the country. LOJIC staff routinely participate in presenting papers and workshops at various national and regional conferences, including the annual ESRI User Conference, URISA, GITA, the annual Water Environmental Federation conference, national APWA conference, and other utility and systems management conferences and seminars throughout the world. The following is a list of papers and presentations by LOJIC management and technical staff, as well as consortium members and LOJIC consultants over the last several years.

- *GIS Partnerships*, Curt Bynum and Adam Forseth (KIPDA), Kentucky State Conference, 2000.
- *A GIS Consortium – If You Build It, They Will Come*, Curt Bynum, GITA/IKO Conference, 1998.
- *A LOJIC-al Approach to Providing GIS Products and Services*, Jane Poole, ESRI User Conference, 1997.
- *LOJIC - The Louisville/Jefferson County, Kentucky GIS Project*, Bruce Seigle, Fourth Brazilian Symposium on Geographic Information Systems, 1997.
- *Introduction to GIS*, Bruce Seigle, Kentucky Association of Professional Surveyors Winter Conference Workshop, 1996.
- *LOJIC GIS Products, Services and Kentucky Open Records*, Jane Poole, Kentucky GIS Conference, 1996.
- *Urban Stream Water Quality Planning and Monitoring*, Gordon Garner, Water Environmental Federation, 1996.
- *Managing Parcel Data in the LOJIC GIS*, Ben Marquess and Elise Just, Kentucky GIS Conference, 1996.
- *Document Imaging Technology and GIS Workshop*, Rosanne Kruzich, Mid America GIS Symposium, 1996.
- *A LOJIC-al Approach to Updating a Digital Photogrammetric Base Map*, Curt Bynum and Jeff Ackerman, ESRI User Conference, 1995.
- *The Great Debate: Public vs. Private Sale of GIS Products and Services*, Bruce Seigle, URISA, 1995.
- *System Integration at the Metropolitan Sewer District*, Rosanne Kruzich, presentations to Annual Right-of-Way Conference, URISA Annual Conference, and Hansen Information Technologies User Conference Keynote presentation, 1995
- *Using GIS in NPDES Permitting and Compliance*, Kevin Spond and Steve McKinley, URISA, 1995.
- *GIS Concepts and Hands-On Demonstrations*, Curt Bynum, Kentucky Information Technology Summit, 1995.
- *Address Matching and Address Ranges*, Bill Mattingly, AM/FM IKO Regional Conference, 1995.
- *Getting Started with GIS*, Curt Bynum, Kentucky GIS Conference, 1995.
- *Interagency GIS Cooperation*, Bruce Seigle, Kentucky GIS Conference, 1995.
- *Designing a Parcel Public Access System Using ArcView*, Bill Mattingly, ESRI User Conference, 1995.
- *Implementing Local GIS Metadata and Application Documentation*, Wade Drane and Curt Bynum, ESRI User Conference, 1995.
- *Interaction of Arc/Info and ArcView with Oracle in Tracking Hazardous Material Information*, Ben Marquess, ESRI User Conference, 1995.
- *Managing Parcels in an ArcStorm Database*, Christi Stevens, ESRI User Conference, 1995.

- *Integrating Imaging Technology and GIS*, Rosanne Kruzich, Mid-America GIS Symposium, 1994.
- *Digital Land Records Data in the LOJIC GIS*, Curt Bynum, Kentucky Association of Professional Surveyors, 1994.
- *Data Sharing, Data Sales*, Gordon R. Garner with Jack Dangermond, URISA, 1994.
- *CityNet -- The Future of Systems and Network Integration*, Peggy Swain, Kentucky GIS Conference, 1994.
- *Floodplain Mapping: Working with FEMA to Get Things Done*, Curt Bynum, Kentucky GIS Conference, 1994.
- *Kentucky Open Records Law and Its Impact on the Sale of GIS Products and Services*, Bruce Seigle, Kentucky GIS Conference, 1994.
- *A LOJIC-al Approach to Digital Property Map Quality Control*, Wade Drane, ESRI User Conference, 1993.
- *Utilizing GIS in the Creation of Flood Insurance Rate Maps of Jefferson County*, Julie Price and Curt Bynum, ESRI User Conference, 1992.
- *A LOJIC-al Approach to Property Map Conversion*, Curt Bynum and Kevin Trujillo, ESRI User Conference, 1992.
- *Providing GIS Products: A Local Agency Experience*, Jeff Ackerman, ESRI User Conference, 1992.
- *Development of a Digital Watershed Master Plan for a Pollutant Discharge Elimination System*, Bruce Carroll, ESRI User Conference, 1992.