LOJIC Strategy Innovation Discovery Brief

A Report to the LOJIC Policy Board

By the LOJIC Strategy Innovation Team

December 11, 2014

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Purpose

This report, a Discovery Brief, to LOJIC Policy Board members is provided as an update on the various activities and overall status of the LOJIC Strategy Innovation (SI) effort. Over the past six months, the SI Team has made marked progress toward its goals and objectives, but completion of the entire effort, including developing recommendations to the LOJIC Policy Board, are still some months out. This report is not intended to present specific recommendations or conclusions at this time. The purpose of this Discovery Brief is to offer a "State of the Consortium" point of view to the Policy Board so that eventual SI Team recommendations will have proper context and sets the stage for what comes next.

Background

At its March 27, 2014 meeting the LOJIC Policy Board endorsed a Strategy Innovation approach in assessing the current state of LOJIC and developing recommendations for best innovative practices in LOJIC governance, organization, funding and opportunities for enhanced applications of geospatial technology. The Board agreed to use a hybrid approach in this effort utilizing a mix of consulting resources and the expertise and innovation from within LOJIC partner organizations. An outside consultant would examine best innovative GIS practices in governance and funding across the country. James Bates, LWC Manager of Infrastructure Records, and Curt Bynum, LOJIC Manager, were tasked as co-leaders to organize and execute the LOJIC Strategy Innovation (SI) effort with the goals of identifying:

- New opportunities for developing/marketing LOJIC data and services.
- New Opportunities for developing new internal LOJIC applications.
- Sustainable LOJIC organizational structure, governance and funding options.

During April-June, 2014, the co-leaders researched the SI process, developed a preliminary scope, timeline and deliverables for the SI effort, drafted initial goals, objectives and SI Team charter, finalized the scope of work for a Best Practices consultant and confirmed stakeholder participants for the LOJIC SI effort. This information along with co-leader recommendation to proceed with the SI plan was presented and endorsed at the June 26, 2014 LOJIC Policy Board meeting.

The LOJIC SI Team consists of the following partner representatives:

Curt Bynum, LOJIC Manager, Co-Leader
James Bates, LWC Manager of Infrastructure Records, Co-Leader
Julie Buckler, MSD GIS Services and Records Manager
Dana Spratt, MetroTS/MetroSafe Service Level Manager (replaced Debbie Fox, MetroSafe Director)
Debbie Lowery, MetroTS Performance Improvement-Outreach Manager
Sharon Meador, MetroTS IT Business Services Manager
Jay Mickle, PVA Mapping and GIS Team Director
Jane Poole, LOJIC Customer Support Administrator

The LOJIC SI Team has conducted ongoing research, performed in-depth self-assessments, reviewed consultant proposals, surveyed users, conducted interviews and has met near weekly since mid-May, 2014. In an early meeting, SI Team received a presentation and materials on the background and history of LOJIC development and expansion since its inception in 1986 (see Appendix 1).

In July, 2014, LOJIC released an RFP for Analysis of Best Innovative GIS Practices. Proposals received in late July were evaluated and resulted in a contract award in early October to Croswell-Schulte IT Consultants. To-date the Croswell-Schulte team has conducted kick-off meetings with the SI Team, deployed a nationwide GIS best practices survey, and conducted discussion forums with all LOJIC partners, LOJIC staff, internal and external users.

The SI Team has completed its portion of the Discovery Phase, a period of information gathering and assessment that will be augmented and supplemented through the work of Croswell-Schulte's best practices research and recommendations.

Strategy Innovation Process

The Strategy Innovation approach as applied in this effort is based on concepts and processes from the book, *The Power of Strategy Innovation*, by Robert E. Johnston, Jr. and J. Douglas Bate. The Strategy Innovation Process is ultimately a method for creating a portfolio of innovative, new opportunities that could become the basis for a new/different strategic direction for an organization. Strategy Innovation differs from Strategic Planning in that it is market-centric rather than organization-centric. The process consists of a series of phases:

Discovery Phase:

Assess the current state of LOJIC, the current state and trends associated with GIS and Information Technology in general, as well as trends in municipal needs.

Creating Phase:

Uses information gathered during the Discovery Phase as "food for thought".
Aims to identify and develop innovative concepts that will shape LOJIC moving forward.

Mapping Phase:

Takes ideas and recommendations assembled during the Creating Phase and develops them into final recommendations and implementable action items.

The LOJIC SI Team utilized a wide range of Discovery Phase tools and activities that have included:

Self-Assessments

Self-assessments (see Appendix 2) were performed by each partner agency and LOJIC staff as written summaries and presentations designed to put all SI Team members on level footing regarding their individual understanding of LOJIC and raise Team awareness of how the resource is being used across the consortium. Self-assessments from the perspective of each partner and LOJIC staff described how LOJIC is used, what works well, what needs improvement, and various dependencies on the LOJIC enterprise and staff. Each self-assessment described internal staff resources that utilize LOJIC, each entity's relative competencies, strengths and weaknesses, areas for internal improvement and future needs for additional technologies, resources and support from LOJIC.

LOJIC User Surveys

Extensive user surveys (see Appendix 3) were conducted for two categories of LOJIC users: 1) **internal** partner agency users and non-partner licensees, and 2) **external** public users. The surveys were intended to provide feedback on the level of LOJIC use and what LOJIC customers want, need and expect.

The **internal survey**, sent to 133 LOJIC users across all partner agencies, resulted in a 71% response rate. Over one-third of the total 94 internal survey responses, 36.2%, came from Metro users, with MSD at 19.1%, LWC at 13.8%, PVA at 3.2% and "Other" category at 27.7%. Some standout observations and conclusions from the results of the survey of internal users include:

- There is wide diversity of duties and functions among LOJIC's user base.
- Nearly two-thirds of internal respondents use LOJIC once each week or more.
- Core data is being heavily used, especially aerial imagery, plan/topo, addresses and parcels.
- There is strong desire for greater communication and collaboration among LOJIC users.
- Users acknowledge the robust nature of the spatial data available to them.
- Applications and tools are fairly well utilized, but may need more training.
- Modeling/programming and analysis need is significant and many users want to deepen their skills in these areas.
- Users expressed that "lack of time" is a continuing barrier to obtaining training, broadening skills and maximizing the use of LOJIC.
- Respondents provided many interesting ideas for expanding and enhancing LOJIC user experience that will be useful to the Strategic Innovation process.

The **external survey**, made publicly available as a link on various LOJIC web tools, elicited 201 responses from the general public and a range of business users in real estate and development, insurance, finance, social services and education. Some standout observations and conclusions from the results of the survey of internal users include:

- Responses were heavy in the areas of personal research, especially pertaining to real estate and development.
- Large majority of responses cited property data, zoning information, data query and printing maps as reasons for LOJIC use.
- Nearly all web-applications received high marks for content, performance and ease of use, with request that all data be accessible in a single application.
- Respondents requested enhanced map printing, access to more PVA data and generally more freely available open data.

Interviews

Interviews (see Appendix 4) were conducted with a range of forward-thinking individuals associated with the GIS industry and municipal technology needs to provide a cross-section of points-of-view on issues facing LOJIC. The LOJIC SI Team conducted interviews with the following five personalities:

- **Ted Smith**, Metro Chief of Civic Innovation
- **James Fee**, URS Spatial IT Director, independent GIS consultant and renowned GIS Blogger
- **Michael Schnuerle**, YourMapper, Civic Data Alliance and local open data advocate
- **Jack Dangermond**, Esri President, world-renowned GIS visionary
- **John Antenucci**, PlanGraphics, Inc. President, global GIS consultant, closely involved in early LOJIC planning and implementation

Each interview covered a wide range of topics impacting municipal GIS such as technology, business and social trends, cloud-based storage and applications, data integrity and security, web-based map providers, database and system standards and interoperability, innovative practices in GIS consortium governance and funding, open data and branding/marketing of municipal GIS partnerships. Interview conversations were engaging, spirited and informative. Central themes and standout observations across all interview included:

- Local government needs GIS to do its work;
    - Get past cost and focus on value.
    - What are we not doing with LOJIC that we should be (missed opportunities)?
- Public's expectation is for open data (csv, shp, KML);
    - Also acknowledge need for secure/sensitive data and applications.
- Branding and greater visibility is needed for LOJIC to increase awareness, demand and marketability.
- Focused responsive web apps to support a technology savvy community…MOBILE!
- Continued public/agency funding in one form or another is necessary;
    - LOJIC model has been copied and has persisted.
    - Don't fix what's not broken.
    - Funding via line item budgets, transaction fees earmarked for LOJIC support.
- Hybrid GIS of Cloud and Local, it's not either/or, explore best business case for each.
    - Understand and value the difference between LOJIC and open web maps such as Google;
    - Local GIS data is recognized and valued as authoritative and most current.
- Fees for services and analysis from local data.

Consultant Assistance

Support services from Croswell-Schulte IT Consultants were procured over the summer 2014 through release of an RFP and subsequent proposal evaluations to perform a *Best Innovative GIS Practices Analysis* for LOJIC to augment the SI effort. The scope and objectives of the analysis performed by Croswell-Schulte are intended to:

- Assess and summarize best innovative practices in governance, financing, technology, staffing and technical support for a number of representative multi-jurisdictional GIS partnerships across the country and compare/contrast with current LOJIC operations.

- Identify options and recommendations for innovative sustainable governance and financing for LOJIC and each participant agency to fund, generate revenue or otherwise offset payment towards annual LOJIC expenses and assess each option for applicability across LOJIC user agencies. Analysis will include an evaluation of various models for user licenses, service level agreements and associated fees.

- Identify and assess new and innovative opportunities and sources for developing and marketing LOJIC data and services.

- Identify innovative trends in information technology, data dissemination policies and business practices most likely to impact municipal GIS in the short/long term and provide recommendations for how LOJIC might best position itself to leverage these trends to the advantage of its partners and the community.

To date, the consultant team has conducted project kick-off and work plan meetings with the SI Team, released an extensive survey of Best Innovative GIS Practices to 125 sites nationwide, reviewed all SI Team documents and materials, and conducted discussion forums with all LOJIC partners and external user groups. The consulting effort will culminate in two late Winter/early Spring 2015 reports: 1) *Best Innovative GIS Practices Profile Report* summarizing best practices survey results, and 2*) Governance and Funding Options Report* outlining options and recommendations for the ongoing sustainability of LOJIC.

Current State of LOJIC

From the efforts of the LOJIC SI Team so far from honest, in-depth self-assessments, interviews with industry and community leaders and from substantial feedback from internal and external users, the current perception of LOJIC is, on the whole, that of a successful, productive partnership. LOJIC is seen as a highly valued resource that is widely used across all partner agencies, and public and private sectors in the community. There are, however, many aspects of the LOJIC system, organization and user community to be improved and enhanced. There also appear to be many avenues to explore toward the goal of spurring greater use, collaboration and visibility among partners and external users. For most of its near 30-year history, LOJIC has had an inward focus primarily driven by partner needs, but in recent years LOJIC has experienced mounting outward pressure from the explosion in available spatial data and growing public interactions and expectations for open, easily accessible data and information.

LOJIC organization and funding landscapes in recent years has resulted in a measure of stagnation in relationships among users across LOJIC user agencies. While continuing to function and grow, LOJIC has lacked active and engaged technical and administrative bodies. There appears to be significant latent demand for higher-level use of LOJIC resources. This indicates a need to place more emphasis on partner communication, training and involvement, as well as clarification of LOJIC's overall mission and goals. User agencies have much untapped potential, especially across Metro agencies.

The Discovery Phase exploration of LOJIC, its partners and users has not revealed a diminishing need for LOJIC, but rather a growing appetite for what LOJIC has to offer, if effectively delivered and made more easily available. Ultimately, the future of LOJIC as a municipal and community resource will likely hinge on finding ways to tap into and leverage ever-changing societal expectations and shifts in technology.

Next Steps and Remaining Timeline

While the SI Team's components of the Discovery Phase have been completed, the consultant work on the Best Practices report will continue through mid-February. Our consultant will deliver the Best GIS Practices report and Governance and Funding report in early February and mid-March, respectively. Immediately thereafter the SI Team has planned a two-month Creating Phase consisting of in-depth examination and evaluation of consultant findings and recommendations, brainstorming, investigating and prioritizing various initiatives related to LOJIC. Following completion of the Creating Phase, the SI Team will begin a one-month Mapping Phase to compile specific action items, formulate recommendations and craft a written report to present to the LOJIC Policy Board at the end of May, 2015 (see Appendix 5).

LOJIC Strategy Innovation Discovery Brief

Appendix 1

Strategy Innovation Team Presentation on the History of LOJIC

LOJIC

Louisville/Jefferson County Information Consortium

"If you build it they will come."

30 years of GIS partnership

Origins of the "idea", exploring feasibility, partnerships

Building base data, system, staff /user expertise

Growing critical data, applications, training, funding

Evolution of technology, staff specialization, user explosion

Integration of data/applications with other critical tools

Web-based GIS, growing demands for public access, e-gov't

1980's – There's gotta be a better way!

1981 – Old Louisville sewer explosion

1983 – Southwestern outfall floodgate failure

1985 – Suburban area sewer expansion

1987 – Countywide stormwater management

1980's – Together it'll be better and cheaper.

A "champion" stepped up with first funding, guidance, vision

Feasibility study and implementation plan for community GIS

Spring '86 aerial photos and plan/topo mapping

Staff of half-time "mapping coordinator" and 3 college grads

MOU & 15-yr. agrmts with City, County, MSD for CM/DMS

Technical Cmte formed to procure GIS HW/SW (Esri selected)

1980's – Together it'll be better and cheaper.

Policy Cmte formed to govern/direct growth and development

PVA signs MOU and agmt with MSD to join CM/DMS

Full-time Mapping Coordinator and Sytem Administrator

Initial system/software installed by Esri (Prime, Tektronics, SUN)

First group of 12 CM/DMS users complete Arc/Info training

Studied other sites: CAGIS, IMAGIS, MAGIC, LINK, etc

1990's – Growing data, expertise, users ...and a reputation

Policy Cmte renames CM/DMS to LOJIC…and takes a year to design a new logo ☺

2-yr. PVA parcel mapping project begun

New data created by partners: sewer/drainage, watersheds, zoning, land use, politicals, floodplains, street centerlines, site addresses, police/fire/EMS, parks, census, 5 updates of aerial photos/plan/topo, orthoimagery

LWC joins LOJIC, builds water infrastructure data

First data sharing agreement with UofL

1990's – Growing data, expertise, users ...and a reputation

Migrated from central Prime mini to distributed SUN

ArcView put LOJIC on desktop pc's, number of users tripled

LOJIC staff at 9, organized into teams: data, apps, system, support

Custom apps for maintenance of parcels, centerlines/addresses

First public access apps at PVA and City Planning

'97 flood disaster increased reliance on LOJIC for emergencies

1990's – Growing data, expertise, users ...and a reputation

Policy Cmte renames CM/DMS to LOJIC…and takes a year to design a new logo ☺

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LWC joins LOJIC, builds water infrastructure data

'97 flood response raised EMA reliance on LOJIC

2000's – Change is mandatory, we grow or die.

LOJIC upgraded to ArcGIS 8.3, Oracle/SDE geodatabases and thin client/fat server using Citrix, eliminating local software

Expanded aerial imagery and plan/topo mapping to Oldham, Bullitt

4 updates of aerial imagery and plan/topo mapping

ArcIMS and web apps Voter Info, Flood Determination, PVA subscription, My Louisville, Standard Info Map, EMA Map, Snow Routes, MetroWatch, CCI, Bike Routes

Integrates with Hansen/MIDAS and develops suite of Hansen viewers in ArcView 3x

2000's – Change is mandatory, we grow or die.

Executed ELA with Esri due to rapid growth in users and software consumption…leading to an increase in users

Executed data sharing agreements with dozen local entities, suburban fire districts, municipalities, LG&E, etc

Policy Cmte undertakes LOJIC Strategic Plan

Deployed ArcGIS Server and migrated ArcIMS web apps

With MetroTS developed ARRA web app

Created suite of HARP viewers for Hansen users

2010's – Sustaining during lean times

Upgrade to ArcGIS and Server 10.0

New funding arrangement: partners share in capital expenses, MSD carries O&M, LOJIC maintains/enhances all existing data/apps

2012 aerial imagery, LiDAR, thermal imagery, plan/topo updates

Growth in users, especially Metro agencies

Data migration, resource interfaces for Hansen upgrade,18-month project lasting 3 years ☺

2010's – Sustaining during lean times

Gearing up for upgrade to ArcGIS and Server 10.2 Winter 2014?

A complete architecture change to Server; upgrade to Oracle 11g begun, web apps off ADF to JavaScript, upgrading AMD, exploring database replication to isolate web traffic

Upgrade all HARP viewers and all other web apps

Likely hold next aerial imagery and plan/topo update for bridges

Hansen 8.3 upgrade looming…

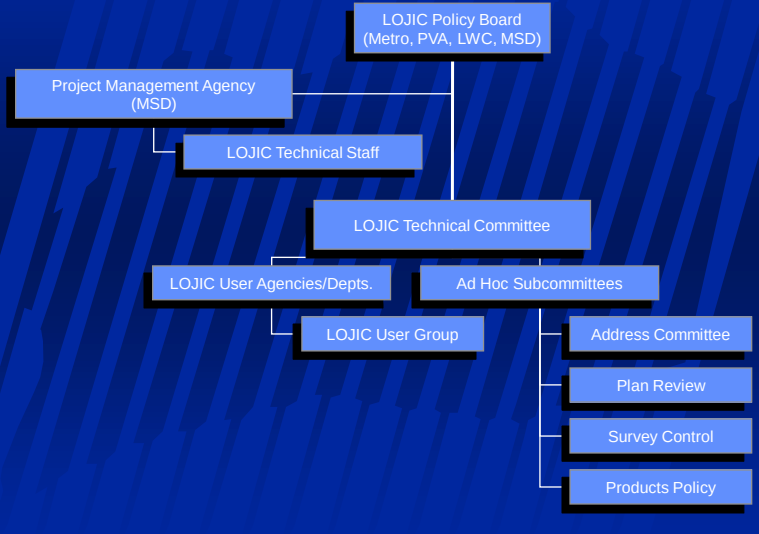
LOJIC Partners

Louisville Metro
Property Valuation Administrator
Metropolitan Sewer District
Louisville Water Company

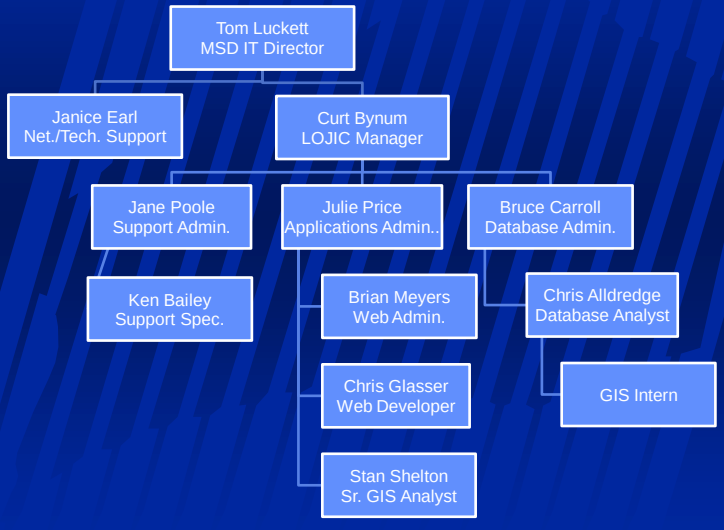
LOJIC "Subscribers"

LG&E
TARC
KIPDA
Seven County Services
University of Louisville
Courier-Journal
Buechel Fire District
Jeffersontown Fire District
Lyndon Fire District
Middletown Fire District
Bullitt County
Network Center for Community Change
Louisville Metro Housing Authority
Jefferson County Public Schools
Kentucky Transportation Cabinet

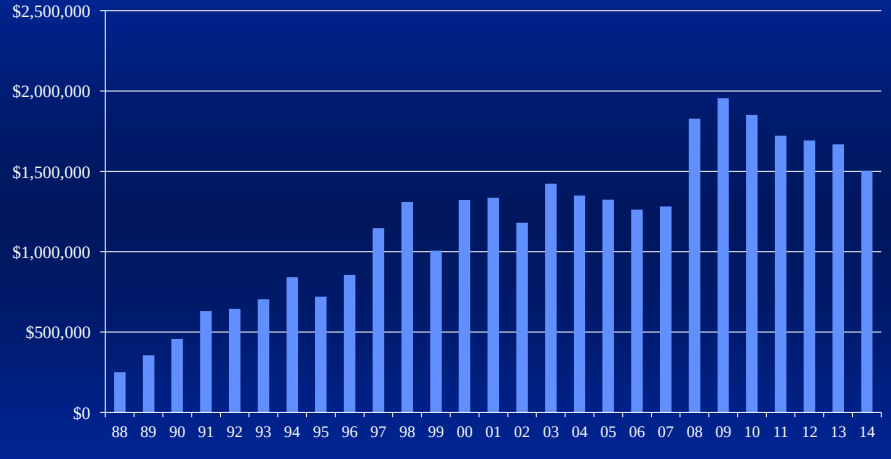
LOJIC Organization



LOJIC GIS Technical Staff



LOJIC Operations & Capital Budget



Our Major Geospatial Databases

- Digital Orthoimagery / LiDAR – 6-inch color, 1-m classified LiDAR, Terrain Dataset, 2-3 year update
- Planimetric / Topographic Mapping - compiled at 1"=100', 94 features, 3-year update cycle
- Property - 325,000 parcels, ownership, characteristics, assessment, historical data, sales, daily updates
- Site Addresses / Street Address Ranges - daily updates, basis for E911, Hansen and various GIS geoprocessing applications
- Utilities - sanitary sewer, storm drainage, water, gas, power
- Planning - land use, form districts, zoning, preservation districts, political/administrative/emergency districts
- Floodplain - FEMA Flood Insurance Rate Maps

Our Major Applications

- Land record maintenance/public access
- Street centerline/address maintenance
- Sewer & Drain record/facilities maintenance
- Asset and work order management interface
- Suite of custom Hansen/HARP viewers
- E911 geo-data processing/response
- Floodplain mgt. & insurance determination
- MetroCall response/reporting
- Pavement and street sign management
- Crime statistics/analysis
- Custom cartography/data products
- Web-based GIS and public access

Keys to LOJIC Partnership Success

A GIS "Champion" stepped forward
Financial and organizational commitment
Early sense of "community" mission
Appropriate use of consultants
Long range goals, but met incremental needs
Data, system, staff allowed to evolve
Early involvement of other agencies
Kept early low profile, didn't oversell
Investment in technical staff and core users
Training, training, training

Keys to LOJIC Partnership Success

Each partner is responsible for data maintenance
Databases built "from the ground up"
Everybody plays, everybody pays
Active Policy and Technical Committees
Open to other partners and licensees
Products and services to public / private sector
Cooperative projects and applications
Proactive user support
Reliable central address database

Benefits of Consortium Approach

Strength in numbers
Forces procedural / technical standards
Eliminates redundancy
Enhances data sharing
Promotes coordination and cooperation
Builds on itself
Results are better public service

LOJIC is a national success...

1996 AM/FM/GITA GIS Excellence Award

5 ESRI Special Achievement in GIS Awards

6 ESRI GIS Application Development Awards

3 ESRI Cartographic Design Awards

2003 KAMP Exemplary System Award

2003 URISA Exemplary Government System Award

3 Champions for Children awards for GIS education

2012 KAPA Outstanding Use of Technology Award

LOJIC

Louisville/Jefferson County Information Consortium

"If you build it they will come."

LOJIC Strategy Innovation Discovery Brief

Appendix 2

Self-Assessments by:

LOJIC

Louisville Water Company

Property Valuation Administrator

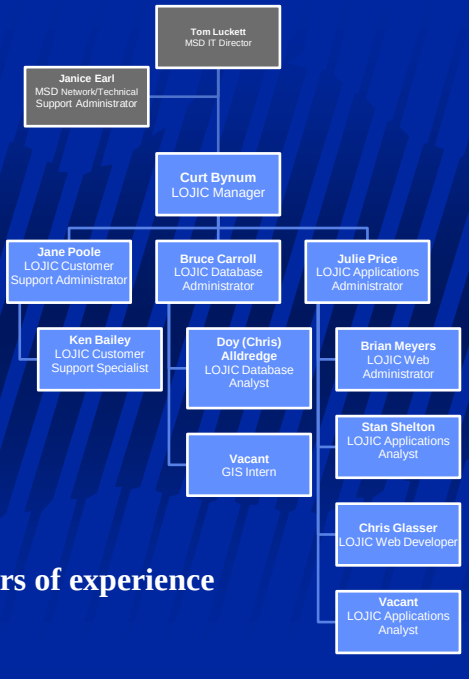
Metropolitan Sewer District

Louisville Metro Government

LOJIC Self-Assessment Summary

A Geographic Information System (GIS) Partnership to Meet Growing Community Needs

Staff



Over 175+ years of experience

Hardware and Software

- ArcInfo Desktop 10.0 software deployed on a Citrix MetaFrame Presentation Server 4.5 farm of Windows 2003 R2 Servers
- ArcGIS Server 10.0 software deployed on Windows Server 2008 R2 Virtual Machine on an ESX farm
- SDE version 10.0, Oracle 10G, Solaris 9

Applications, Processes and Services

- LOJIC Staff has created and /or supports over 25 applications and over 34 automated processes.
- LOJIC Staff has created and supports over 117 map, geocoding or feature web services.

Customer Support

- Support 125 Citrix users.
- FTP data site used by 35 consultants and 10 FTP licensees.
- Six external agency Citrix licensees.
- Licensees and in-office products revenue about $175,000 per year.

LOJIC Budget

- Detailed budget information starting in FY06 to projected budget to FY18.
- FY10 – MSD starts subsidy.
- FY16 – Partners start working toward reducing MSD subsidy over 3 years.

Strengths/Weakness of LOJIC Staff & Structure

Strengths

- Experienced staff
- Clear division of responsibility between teams (Data, Applications, Customer Support)
- Very collaborative and work well as a team.

Weaknesses

- Lack of full time network administrator
- No succession planning for experienced staff retirement
- Lack Research & Development Resources – (time, staff, software and hardware)
- Underpaid compared to other MSD Depts and IT Industry

Key Competencies/Weaknesses

Key Competencies

- Expertise in individual areas (data, applications, customer support)
- Leadership
- Planning

Weaknesses

- Training and expertise in new technology, software, application code.

Major Projects/Services over the next 2 years

- Oracle upgrade to 11g
- ArcGIS ArcServer and Desktop upgrade to 10.2
- HARP upgrade
- Mobile Applications with Responsive Design (new and existing)
- Routing
- Database Replication
- ArcGIS Online for Organizations

Sufficient Resources?

- Lack sufficient resources (people, hardware, software, skills)
- Need more application developers
- Need major upgrades to network infrastructure including Oracle, ArcGIS and Windows servers and Citrix.
- Need major upgrade of major software including ArcGIS Desktop and Microsoft Office
- More training in and hands-on experience with newer technologies.

Future of LOJIC

Opportunities

- Mobile Technology including apps with responsive design.
- More contemporary Open Data policies.
- More open web services
- Routing
- 3D mapping
- More rapid app development via ArcGIS Online.

Barriers

- Lack of resources for Research and Development
- Out of date data policy
- Lack of GIS expertise among some LOJIC partners
- Lack of collaboration from IT Staff.
- IT infrastructure not set up for new technology.

Field of Today Self-Assessment

Louisville Water Company

July 2, 2014

Agency Mission/Purpose

The Louisville Water Company's (LWC) Mission is to provide safe, high quality water and related services that deliver an exceptional value to its customers, its shareholder and the community. LWC provides this service in a 620 miles area covering all of Jefferson County, as well as portions of Bullitt and Oldham Counties in Kentucky. Additionally LWC wholesales water to numerous surrounding municipalities. The Company draws on the abundant water supply of the Ohio River t deliver water through over 4,150 miles of water mains.

Summary of GIS Mission/Purpose

The mission of the GIS workgroup at LWC is to plan, direct, implement and support the advancement of Geographic Information Systems (GIS), spatial data, applications and tools for management, analysis, planning and operations. The workgroup tasked with promoting and supporting the automation of processes and data, and the integration/interfacing of information systems to leverage spatial capabilities. The GIS group for LWC is managed within the Infrastructure Records Process along with Surveying Services and Pipeline Construction Inspection. The alignment of these three work groups under one department leverages the relationships the groups have in authoring and maintaining spatial data, as well as supporting the overall role they play in managing various aspects of infrastructure records which are a cornerstone of water utility operations.

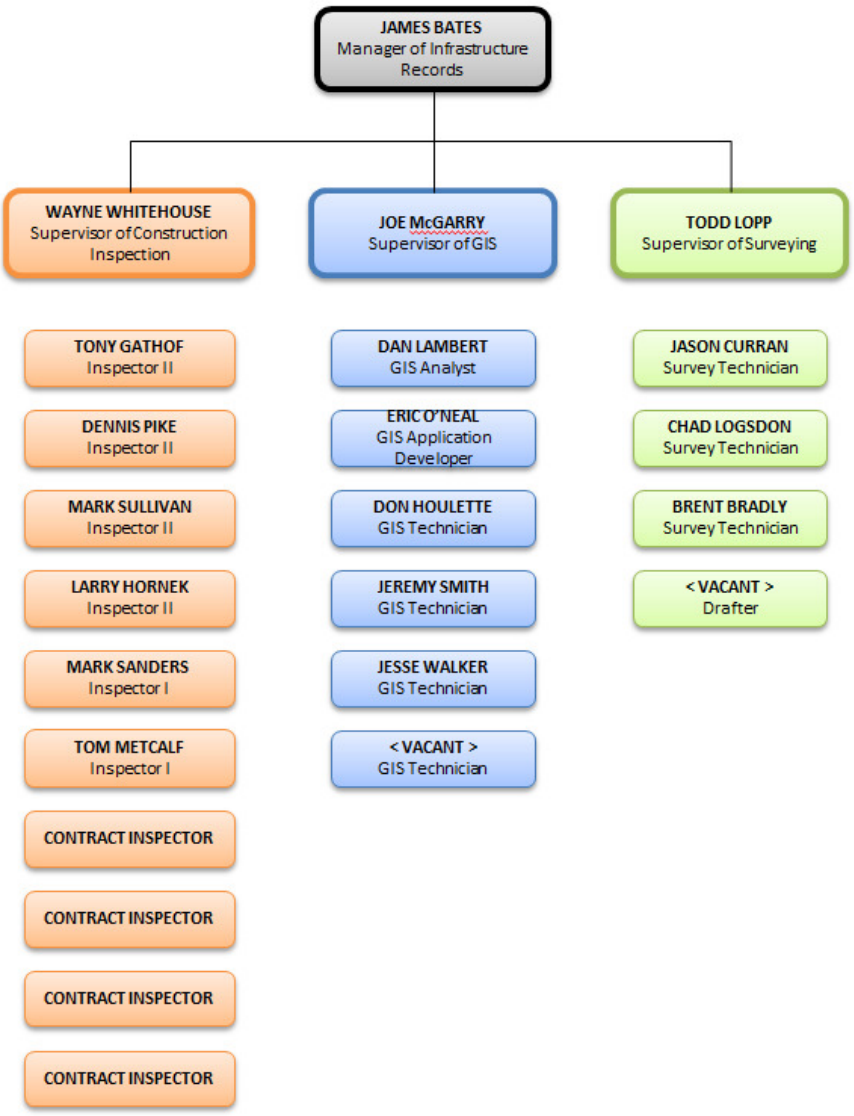
The use of GIS at LWC began in 1992 with the development of Pipe Evaluation Modeling (PEM) in support of the Company's aggressive Main Rehabilitation and Replacement Program (MRRP). LWC joined the LOJIC consortium in 1996 and converted all facility mapping data from AutoCAD to ESRI GIS format from 2000-2003. At present, GIS has been implemented at all levels of management, planning and operations, thus the mission has expanded over time from engineering specific to "enterprise".

People

The GIS workgroup at LWC is managed under the Infrastructure Records Process, which also includes the Surveying Services and Construction Inspection sub-processes. Surveying Services is tasked with providing field surveys for all LWC construction projects, surveying the location of all visible water facility features (e.g. hydrants, valves and meter vaults) for use in the GIS using GPS, and easement plats. Construction Inspection is tasked with the oversight of pipeline installation by both LWC and contractor construction crews. This involves the enforcement of standard pipeline installation specifications and safety protocols. Inspectors compile construction returns ("as-builts") of the completed projects and supply them to the GIS work group for posting into the GIS.

The LWC GIS currently has a staff of six people composed of a GIS Analyst, a GIS Application Developer, three GIS Technicians, and a Supervisor who reports to the Manager of Infrastructure Records. The manager of Infrastructure Records at LWC reports directly to the Vice President and Chief Engineer. (Exhibit 1.)

Exhibit 1.



While the creation of construction drawings for pipeline projects is accomplished by Drafters dispersed among the various Engineering groups, All GIS data creation pertaining to pipeline facilities and related features is handled through the centralized GIS group. As the LWC GIS matured, it was recognized that certain geospatial data sets might need to be maintained or "owned" by other work groups. An example of this is the maintenance of pressure zone information and critical water main status by the Capital Planning and Hydraulics work process. Changes to these data sets are authored by staff in this department but are still funneled through the GIS group for final posting.

Having edits to the GIS flow through the core GIS group has been essential to data standards, consistency and integrity. As LWC continues developing and implementing GIS solution for various work groups, particularly those in the field, there is a growing need to address the ability for individuals to feed data sets (via digital forms for maintenance data) into the main databases without a quality review. LWC has tried to control these situations as best possible through the use of field domains and required fields where

possible, but the main emphasis must be on user education and post-transactional automated quality checks.

Competencies

LWC GIS personnel have a broad, applied understanding of the GIS field, with extensive knowledge in the areas of pipeline facilities, construction and mapping.

Strengths

- Current GIS Technicians have a cumulative facility mapping and GIS experience of 55 years. The GIS group as a whole, including the Manager of Infrastructure Records, has experience totaling more than 125 years in the fields of GIS and mapping. While high, this number was even greater prior to retirements over the past two years.
- The GIS Analyst, GIS Supervisor and Infrastructure Records Manager have extensive experience in both the intricacies of GIS data management, and process analysis and redesign. The latter skills have been key elements in designing GIS tools and systems that have used GIS to enhance the way LWC does business. Focusing on process and operational Improvements has been the key.
- Due to the success and stability of the GIS, personnel are looked to as leaders in the development of other developments and initiatives such as an enterprise asset management strategy.

Challenges

- It is a struggle to maintain and expand skill sets and competencies as GIS continues to be absorbed more and more into main stream information technology. Funding for training and professional development is scarce
- LWC operates at a "lean and mean" staffing level where people develop broad skill sets and provide multiple functions. This makes people very difficult to replace, and LWC has no well-defined succession planning for the GIS area.

Equipment/Software/Applications

Software

ESRI Software	Licenses
ArcInfo	16
ArcEditor CU	3
Viewer CU	11
Spatial Analyst	1
3D Analyst	1
NW Analyst	3
Publisher	1
Server Ent. Basic	2
Staging Ent. Advanced	2
Server Ent. Advanced	3
ArcEngine Runtime (25 Pack)	5
Workflow Mgr. (JTX)	1
EDN	2

Hardware

Internal GIS Servers:

- VENUS – SDE 9.3.1 and Data server
  - OS: LINUX
  - Oracle: Linux Release 6.5 GNOME 2.28.2

- STRATUS -- Main ArcGIS Server production server
  - OS: Windows Server 2008 R2 Standard
    - Service Pack 1
  - Contains IIS webserver and ArcServer 10.0
  - Hosts PDMS and SPIN

- CUMULUS -- Internal test ArcGIS Server and script server
  - OS: Windows Server 2008 R2 Standard
    - Service Pack 1
  - Contains IIS webserver and ArcServer 10.0
  - TEST server mirroring SPIN and PDMS
  - Currently splitting Python scripting with server GISINT until all scripts can be ported to THRD-GISINT. Once this is finished, plans for CUMULUS to become EXACT test mirror of STRATUS as part of DEV -> TEST -> PRODUCTION environment

- THRD-GISINT – Internal GIS server
  - OS: Windows Server 2008 R2 Standard
    - Service Pack 1
  - Currently contains only ArcGIS Desktop 10.0
  - Future plans for ALL Python scripts to be ran from here
  - Future plans to serve as integration environment for ArcServer 10.0
    - Then 10.2 when ready to begin testing
  - Hosts Bugtracking site for mobile SPIN

Internal Mobile GIS Servers

- FOZZIE
  - OS: Windows Server 2003 Standard
  - Staging server for T.C. Technology Mobile GIS software.
- KERMIT
  - OS: Windows Server 2003 Standard
  - Staging server for T.C. Technology Mobile GIS software.

Internal Project Tracking Server

- THRD/TRACKER
  - OS: Windows Server 2008 R2 Standard
  - Server for LWC Engineering Project Tracking Software

External GIS Server

- CIRRUS – Externally server
  - OS: Windows Server 2008 R2 Standard
    - Service Pack 1
  - Contains IIS webserver and ArcServer 10.1
  - Main function now is to host SPIN Mobile and its accompanying map services

Applications

Spatial Pipeline Infrastructure Network (SPIN)
SPIN is an flex-based ArcGIS Server intranet web application intended to provide GIS capabilities to all LWC employees with computers and intranet access. The original SPIN application was an ArcIMS application launched in 2004. The current ArcGIS Server application was launched in 2012. The application contains a wide array of tools to facilitate use by personnel from different departments with varying areas of focus. SPIN is the primary tool for general GIS users in the office at LWC.

Mobile SPIN
Mobile Spin is a Java based, lighter version of the desktop spin application delivered on smart phones and tablets. The application is designed for light GIS users, such as supervisors and managers, to allow access to pipeline facility data and tools while in the field. The application is served out from a secure, outward facing server and may be utilized on multiple smart device platforms.

Plant Drawing Management System (PDMS)
The PDMS was LWC's first implementation of an ArcGIS Server application. It was launched in 2010 and is still a critical resource today. The application has provided both a document management solution and operational risk mitigation by providing spatial and tabular referencing of drawings and plans for LWC plant facilities and structures. While the original document portion of the PDMS focused on drawings, current efforts underwayare linking other documents associated with plant facility assets, such as inspection reports and maintenance manuals.

Mapbook (T.C. Technology)
In 2006 LWC implemented mobile GIS for field personnel using Mapbook software by T.C. Technology (an Esri business partner). The software resides on laptops in LWC vehicles. It is ArcGIS Engine Runtime based and provides multiple tools for field personnel to assess the pipeline infrastructure while performing their work. Personnel "sync" with the mobile mapping server to obtain the latest data updates before departing the LWC distribution system. Once disconnected from the network the unit operates as a self-sufficient unit independent of LWC servers. Laptops with air cards and data plans also have the ability to sync while in the field. LWC has implemented multiple interfaces between the Mapbook software and the existing work order and maintenance data system.

Current and Future Projects

Mobile GIS for Smart Devices
LWC continues developing enhancements for the mobile version of the Spatial Pipeline Infrastructure Network (SPIN) application. The application is designed for light GIS users, such as supervisors and managers, to allow access to pipeline facility data and tools while in the field. The application is served out from a secure, outward facing server and may be utilized on multiple smart device platforms.

Customer Care and Billing (CC&B) Interfaces with GIS
The current project for implementation of Oracle Customer Care and Billing at LWC has provided numerous opportunities to both improve and create relationships between customer data and the GIS. It is also an opportunity to establish the system of record for data shared between the systems and the leverage the power of the GIS to enhance how customer data is used in day to day planning and operations.

Flushing and Cross Connection Program Interfaces with CC&B
The LWC Flushing and Cross Connection backflow prevention inspection work done in the Water Quality Process utilize the Mobile information Management System (MIMS), a product of LWC's mobile GIS vendor T.C. Technology. These work flows are fed in part by customer input and must rely heavily on interfacing with the new CC&B system.

Transmission Main Condition Assessment
LWC's most recent effort focused on a specific area of asset management involves the condition assessment of large transmission water mains. The condition assessment poses a challenge for GIS in that it views pipeline facilities segment by segment and joint by joint rather than the "runs of pipe" from valve to valve found in most GIS data models. This is a complete change of modeling and analysis compared to the original Pipe Evaluation Model which looked at a street segment level of pipe performance. LWC is currently investigating the best way to maintain the appropriate levels of data precision and accuracy to facilitate multiple levels of asset management.

ArcGIS 10.2 Upgrade
LWC's migration to ArcGIS 10.2 will involve significant upgrades of the ESRI Spatial Database Engine (SDE) as well as extensive changes to the current ArcGIS Server architecture, the platform on which LWC's main GIS web applications (SOIN and PDMS) reside. Staff are hoping to begin this effort in late 2014.

Enterprise Asset Management
While LWC's many efforts at managing assets demonstrate progressive thinking with specific focus, they have not been a part of an overall corporate or enterprise asset management strategy. Developing such a common framework is the current task of a corporate team examining how all Company assets fit into this overall scheme. GIS is playing a leadership role in this as both a hub and enabling technology. Currently work is focused on defining data models for company-wide assets not housed in the GIS, including plant facilities. LWC hopes to have a completed and comprehensive enterprise asset management strategy to provide input for the anticipated project work on Oracle Work and Asset Management (WAM) targeted to begin in 2015.

Challenges
- For all intents and purposes Esri is a monopoly with the power to push the market and users in the direction where they want to go. Esri's solutions often seem more geared toward connecting the world under one GIS umbrella (controlled by them) rather than addressing the needs of specific customers or market niches.

- Having only a single developer on staff limits the capacity to do work. This makes scheduling and prioritization critical.
- Are there adequate resources to support what is developed? (See "lean and mean" comment in staff challenges).

Current Uses Of and/or Dependencies On LOJIC and LOJIC staff.

Data Downloads
LOJIC Data is downloaded to the main LWC GIS server (Venus) every weekend. This arrangement was made when LWC first joined LOJIC in 1996 due to the fact that LWC was not a part of the CitiNet network and also wanted to have autonomous control over server availability/up-time. There have been no known data currency issues caused as a result of the weekly update cycle in the eighteen years since LWC became a LOJIC partner.

Technical Support
There are five people at LWC who contact LOJIC directly for technical support and assistance. Other LWC personnel are directed to route any questions concerning GIS and/or LOJIC through these individuals. This is the most effective and efficient methodology due to the fact that the average internal user often does not have a clear understanding of the difference between data that is created and maintained by LOJIC and that which is created and maintained by LWC. There also may be problems that are perceived to be with "LOJIC" data, but the problem is on the LWC server side as opposed to the LOJIC data side. Due to these complexities, making these determinations internally at LWC is essential.

Development Support
LWC has never depended on or utilized LOJIC staff for applications development; however, LOJIC staff have always been willing to share knowledge and ideas when requested in support of LWC's development initiatives. LWC's overall strategy has been one of independent development to support specific water utility operational needs, while insuring that all development maintains compatibility with LOJIC data and systems.

Applications
LWC personnel may occasionally utilize one of LOJIC public web applications for specialized information, but by and large the vast majority of the access to and utilization of LOJIC data is accomplished through one of LWC's applications or directly through ArcGIS.

Critical Data
Data created by LOJIC (e.g. planimetric data. topographic data, etc.), and some data made available through LOJIC (e.g. street centerline, site addresses, parcels, etc.) form the spatial foundation on which LWC both references it's pipeline infrastructure, and integrates GIS functionality into daily operations. The data is incorporated in varying forms into every internal GIS application used by LWC. The loss of this foundation would force LWC to look for alternatives or author its own data at a considerably higher cost.

Future LOJIC and GIS Needs and Wants

As a regional water utility, one of the biggest GIS challenges LWC faces is a lack of regional data. The incorporation of Bullitt and Oldham Counties into the LOJIC PTD and imagery acquisitions has been an essential resource for the company's operational needs. Challenges still exist for those areas where reliable street centerlines, site addresses and parcel data are not available. LWC, as well as Louisville Metro, have a

vested interest in seeing LOJIC continue to grow as a regional GIS provider. This spans beyond utility operations into planning and economic development for the region.

One of the biggest threats to LOJIC is from those who do not understand the difference between the highly detailed and accurate data compiled by LOJIC that is necessary for proper utility operations, and the generalized, sometimes outdated information found through personal GIS portals.

Louisville Water Company

LOJIC STRATEGY INNOVATION TEAM SELF-ASSESSMENT

James Bates
Manager of Infrastructure Records

July 2, 2014

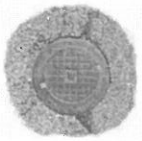
1

Louisville Water Company

306,513 SERVICE CONNECTIONS

4,159 MILES OF PIPE

23,901 FIRE HYDRANTS



52,370 VALVES

GIS in Support of LWC

LWC Mission

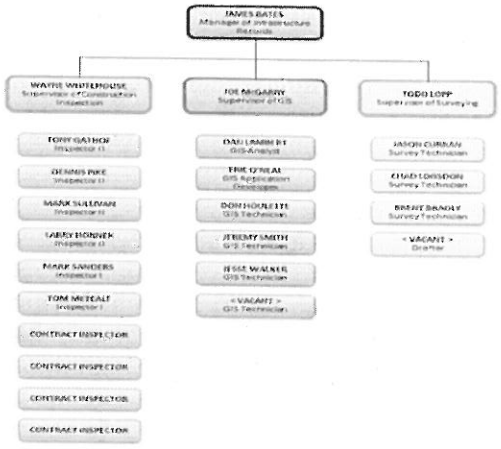
- The Louisville Water Company's (LWC) Mission is to provide safe, high quality water and related services that deliver an exceptional value to its customers, its shareholder and the community.

GIS Mission/Purpose

- The mission of the GIS workgroup at LWC is to plan, direct, implement and support the advancement of Geographic Information Systems (GIS), spatial data, applications and tools for management, analysis, planning and operations.
- The workgroup is tasked with promoting and supporting the automation of processes and data, and the integration/interfacing of information systems to leverage spatial capabilities.

3

Organizational Structure



4

Personnel Competencies

Strengths

- Broad applied understanding of the GIS field, with extensive knowledge in the areas of pipeline facilities, construction and mapping.
- GIS group as a whole, including Management, has experience totaling more than 125 years in the areas of GIS and mapping.
- Staff have extensive experience in both the intricacies of GIS data management, and process analysis and redesign.
- Staff are perceived as leaders in the development of other systems and initiatives (e.g. system integrations, enterprise asset management)

5

Personnel Competencies

Challenges

- Struggle to maintain and expand skill sets and competencies as GIS continues to be absorbed more and more into main stream information technology. Funding for training and professional development is scarce
- LWC operates at a "lean and mean" staffing level where people develop broad skill sets and provide multiple functions/services. This makes people very difficult to replace, and LWC has no well-defined succession planning for the GIS

6

Delivering GIS

LWC Delivers GIS to internal users falling into several general categories:
1) Editors/Power Users, 2) General Web Users, 3) Mobile GIS Users,
4) Mobile/Web.

Editors/Power Users

- There are 25+ people at LWC who have the capability to access LOJIC data directly via ArcGIS Desktop Basic, Standard or Advanced.
- The skill sets vary from those with custom views to view and analyze data, to those who edit data and perform spatial analysis.
- Currently the only editing of "corporate" spatial data outside of the GIS workgroup is performed by staff in Capital Planning and Hydraulics. (Pressure Zones, Critical Main Flags)

7

Delivering GIS

General Web Users

- All LWC personnel with computers and access to the intranet have the ability to access and utilize both GIS applications.
- While moderate analytical capabilities are available through these tools, the primary focus is on the ability to "search, query and investigate".

Mobile GIS

- 100+ LWC personnel utilize a mobile mapping solution (Mapbook) from T.C. Technology.
- The mobile GIS provides access to LOJIC data, LWC data and a suite of tools for field personnel and some office personnel (planners/coordinators).
- Mapbook is an ArcEngine based thick client that does all processing locally on laptops.

8

Delivering GIS

Mobile/Web

- The launch of Mobile SPIN in early 2014 marked a crossover between the mobile and web user groups.
- All processing for the mobile SPIN application is done on a secure outward facing server and delivered to smart devices (phones, tablets, etc.) via a cellular or wireless connection.

9

Applications

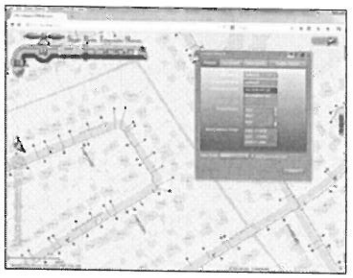
- **Spatial Pipeline Infrastructure Network (SPIN)**
- **SPIN Mobile**
- **Plant Drawing Management System**
- **Mapbook** (T.C. Technology)
- **Project Tracking**

10

Applications

SPIN

- A flex-based ArcGIS Server intranet web application intended to provide GIS capabilities to all LWC employees with computers and intranet access.
- Contains a wide array of tools to facilitate use by personnel from different departments with varying areas of focus.
- Primary tool for general GIS users in the office at LWC.



11

Applications

SPIN Mobile

- Java based, lighter version of the desktop spin application delivered on smart phones and tablets.
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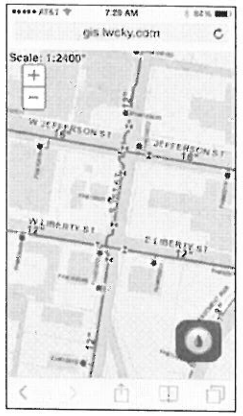
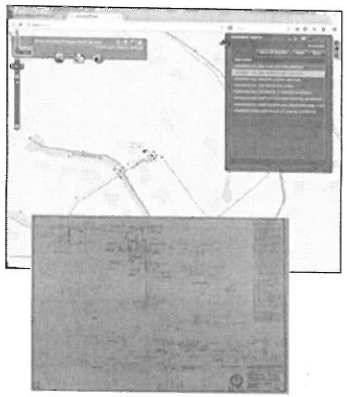


12

Applications

PDMS

- LWC's first implementation of an ArcGIS Server application (2010).
- Provides both a document management solution and operational risk mitigation by providing spatial and tabular referencing of drawings and plans for LWC plant facilities and structures
- Currently being expanded by linking other documents associated with plant facility assets, such as inspection reports and maintenance manuals.



13

Applications

Mapbook

- Mobile GIS software from T.C. Technology implemented in 2006
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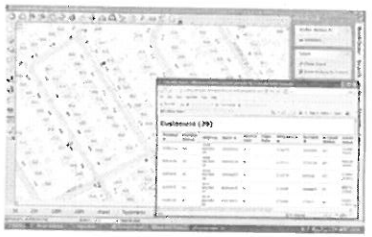

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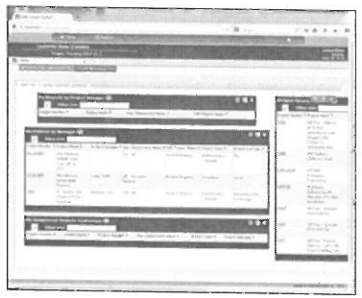
Applications

Project Tracking

- Centralized Project Tracking database under the administration of GIS work group.
- Has linkages to GIS (SPIN) for visual of where projects are located.
- Use heavily by GIS to track status pf projects from inspection through posting into the GIS datrabase.



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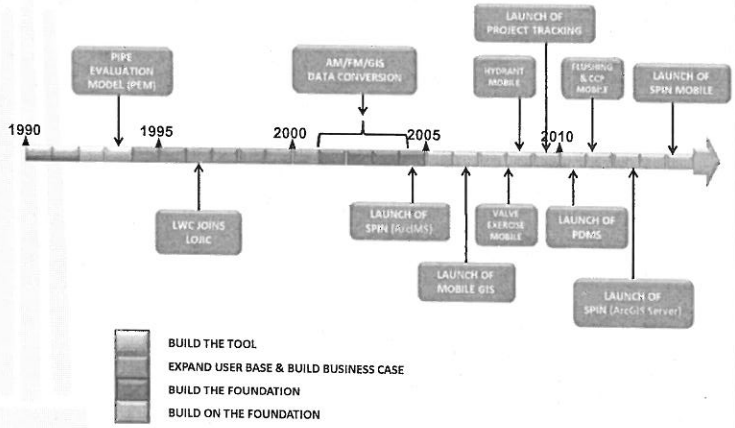
GIS Development Timeline



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Current and Future Projects

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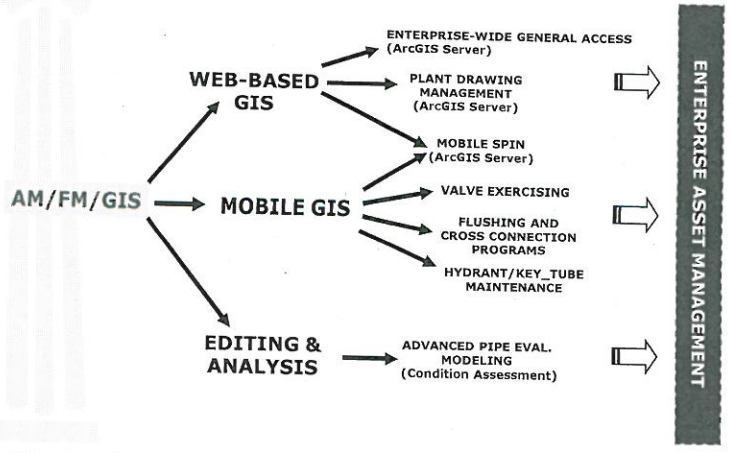
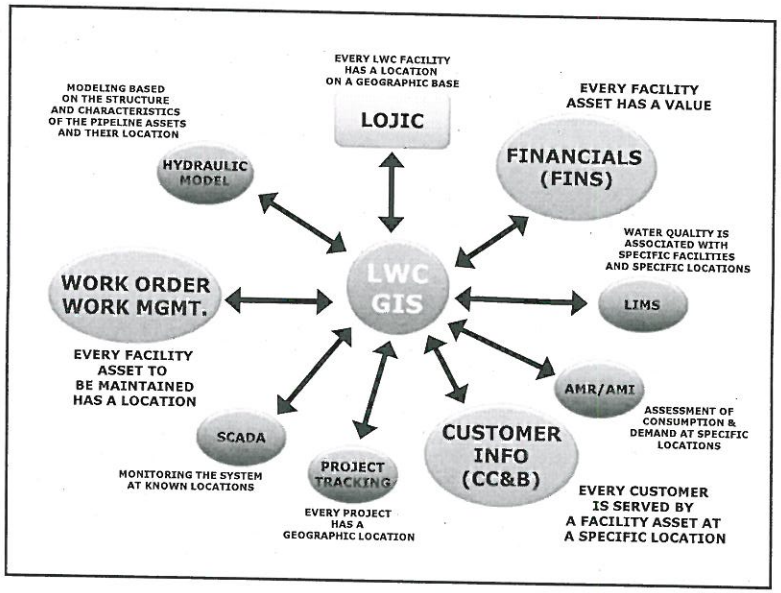
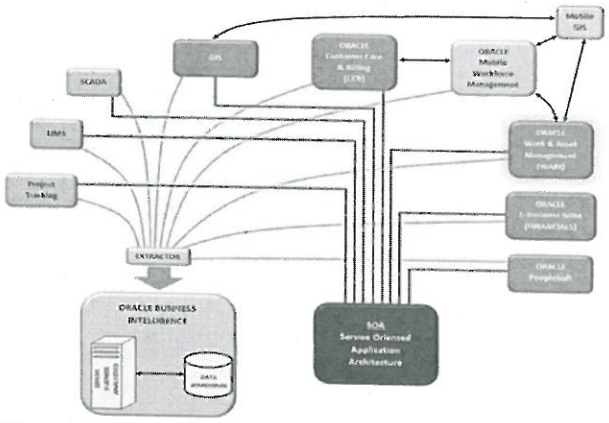
Multi-Generational GIS

Building on that which was built before





Planned IT Connectivity



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Use of LOJIC

Data Downloads and Access

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- There have been no known data currency issues caused as a result of the weekly update cycle in the eighteen years since LWC became a LOJIC partner.

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Technical Support

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Applications

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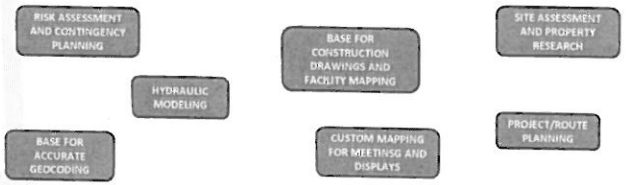
Use of LOJIC

Critical Data

- Data created by LOJIC (e.g. planimetric data, topographic data, etc.), and some data made available through LOJIC (e.g. street centerline, site addresses, parcels, etc.) form the spatial foundation on which LWC both references it's pipeline infrastructure, and integrates GIS functionality into daily operations. LOJIC data is incorporated in varying forms into every internal GIS application used by LWC. The loss of this foundation would force LWC to look for alternatives or author its own data at a considerably higher cost.



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Future of LOJIC

Regional Outlook

- As a regional water utility, one of the biggest GIS challenges LWC faces is a lack of regional data. The incorporation of Bullitt and Oldham Counties into the LOJIC PTD and imagery acquisitions has been an essential resource for the company's operational needs.
- Challenges still exist for those areas where reliable street centerlines, site addresses and parcel data are not available. LWC, as well as Louisville Metro, have a vested interest in seeing LOJIC continue to grow as a regional GIS provider. This spans beyond utility operations into planning and economic development for the region.

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Future of LOJIC

The Utility Perspective

- One of the biggest threats to LOJIC is from a lack of understanding of the difference between the highly detailed and accurate data compiled by LOJIC that is necessary for proper utility operations, and the generalized, sometimes outdated information found through commercial GIS portals for personal use.

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QUESTIONS

?

LOUISVILLE WATER

July 2, 2014

30

Field of Today Self-Assessment

Jefferson County Property Valuation Administration

July 30, 2014

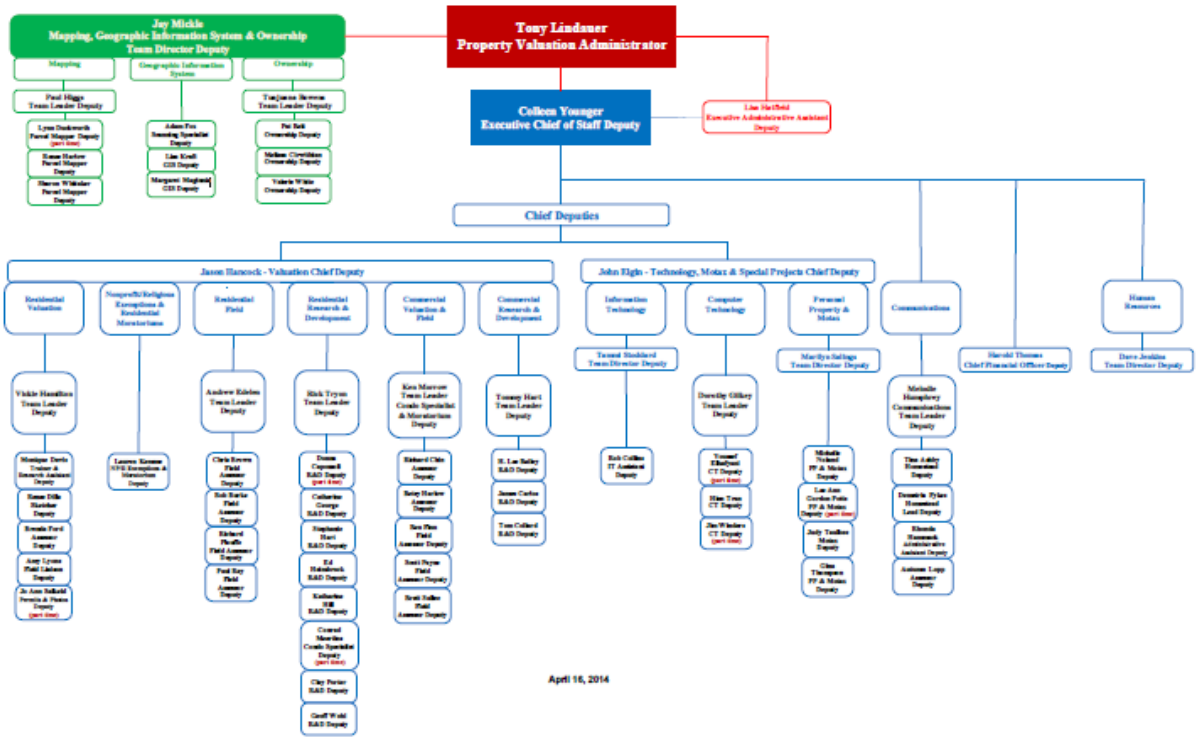
AGENCY FUNCTION & OVERVIEW

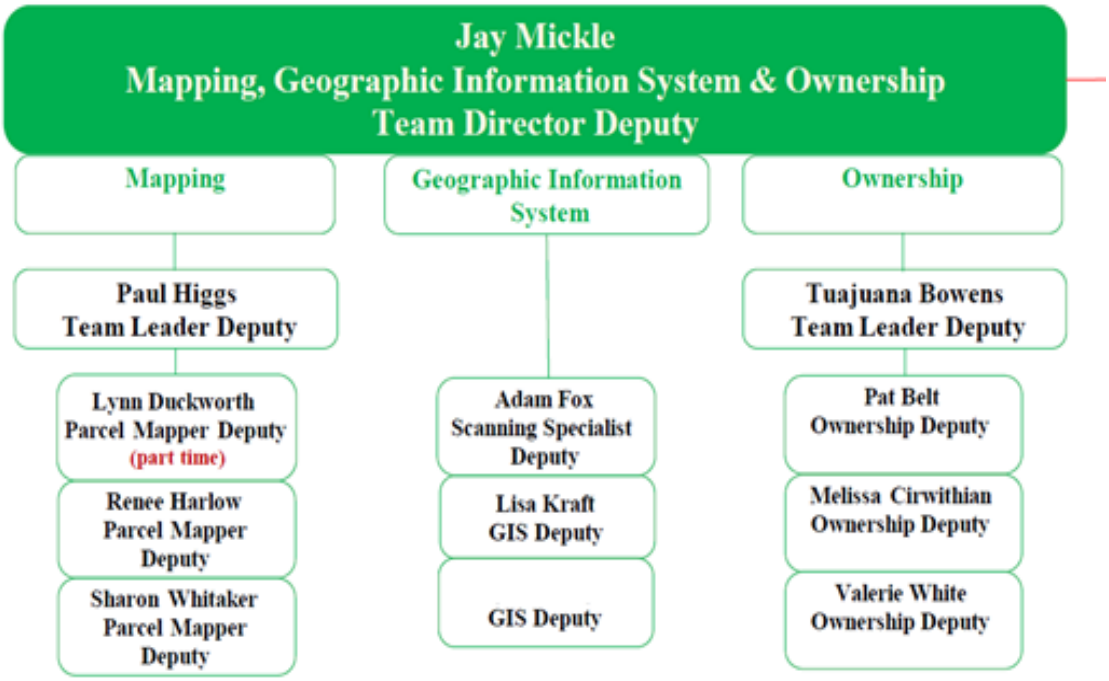
The Jefferson County Property Valuation Administration (PVA) is responsible for assessing all property in Jefferson County, both real and personal, at fair market value. The office operates under the Kentucky Department of Revenue and is led by an elected Property Valuation Administrator. The Jefferson County PVA oversees a total assessment roll of approximately $62 billion, maintains the county's parcel database as a partner in LOJIC, and manages over 313,000 total real property records. The office is allowed a maximum of 75 employees but the current staff size is only 60.

MAPPING/GIS DEPARTMENT OVERVIEW

Maintenance of parcel records and maps has always been one of PVA's core responsibilities. The office's utilization of GIS began with the conversion of old paper maps to digital map layers in 1992. While there was some custom mapping being done by an IT deputy from the mid 1990's to early 2000's, the vast majority of GIS work was performed by the Mapping department staff maintaining the parcel database. In fall of 2006, a separate department (GIS) was spun off to focus exclusively on research, analysis and workflow support for PVA's residential & commercial valuation departments and office administration. Currently, the Mapping department has a staff of 4 editors (3FT, 1 PT), while GIS has 2 full time analysts (including the team director) with a 3rd starting employment in August 2014.

ORGANIZATION





Advantages of structure:

- Mapping & Ownership departments located in same room – they work hand-in-hand
- Concentration of mapping-specific knowledge in Maproom staff
- Open-ended nature of GIS department – adjust on the fly

Disadvantages of structure:

- Silo effect
- Perception of being separate from rest of office
- Confusion among other office staff about exactly what GIS is and what the department does
- These departments sometimes left out of the loop regarding office news due to overall office structure

COMPETENCIES

Strengths:

- Tremendous experience level – mappers have approx. 80 years of experience
- Mappers provide excellent customer service based off their knowledge
- As a team, mappers take pride in their responsibility to provide & maintain accurate parcel data
- Both mapping & GIS departments provide valuable assistance to other departments within PVA

Challenges:

- Revolving door of talent in GIS department
- Cleaning up inaccuracies in parcel data
- Lack of training of mapping staff to expand their skills
- Need to educate other departments as to how GIS can assist in their workflows
- Communication needs to improve throughout organization
- Finding effective ways to provide specific data to different PVA departments
- No succession plan

CURRENT & FUTURE PROJECTS

- Office beginning migration in summer 2014 to new Computer Assisted Mass Appraisal (CAMA) software – this is PVA's core software. New application will support web mapping services & mobile mapping on iPad with disconnected editing of CAMA data.
- ArcGIS 10.2 upgrade – changes for everyone, including editing extension used by mappers.
- Continued documentation of common tasks handled by GIS department
- Automation of some common tasks handled by GIS
- Work towards providing more easy-to-access data to internal staff and external customers
- Consolidation of various map applications – moving away from Department of Redundancy Department

CURRENT SOFTWARE / APPLICATIONS

- All mappers & GIS staff access ArcGIS Desktop 10 via Citrix
- Map edits are performed using Smart Data Strategies' (SDS) DREAMaps Mapper extension to ArcMap
- Pictometry used extensively throughout office
- SDS DREAMaps Analyst application utilized in Residential Research department – incorporates web services published through LOJIC
- ArcGIS Explorer used by Commercial department staff to support various workflows
- PVA website utilizes both desktop and mobile maps for subscribers using web services published through LOJIC

DEPENDENCIES ON LOJIC STAFF

- Keep us connected!
- Development & continued support of various web applications – includes design, development and routine updates
- LOJIC Online Map utilized frequently by PVA staff
- General technical support & troubleshooting

FUTURE GIS NEEDS / WANTS

- Streamline data transfer between PVA & LOJIC – PVA data currently only transferred to LOJIC on a weekly basis. This will change to daily transfer with our new CAMA system.
- Continue to consolidate applications – GIS became the Department of Redundancy Department for a while but we're moving away from that
- Enhanced web maps/applications (desktop and mobile) for both internal staff and website subscribers, with more control in PVA's hands
- Share Pictometry with LOJIC partners

Field of Today Self-Assessment Guide
For MSD's GIS Services and Records
July 23, 2014

I. Agency Name and Function

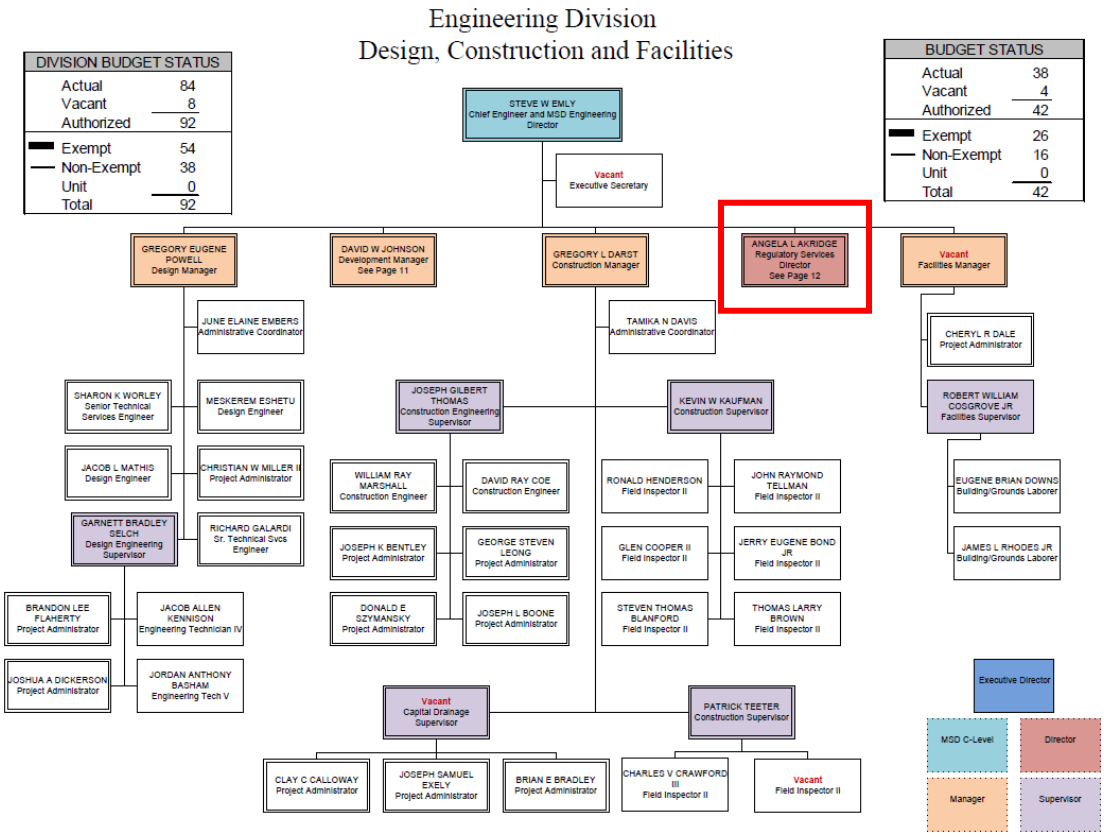
The Louisville Jefferson County Metropolitan Sewer District's (MSD) mission is to provide Wastewater, Drainage and Flood Protection services for our 240,000 sewer and drainage customers. We maintain more than 3,000 miles of sewers, operate 6 regional wastewater quality treatment centers, 16 small treatment centers and 290 Pumping Stations. There is more than 6,000 miles of drainage pipes and channels in our service area. MSD maintains 29 miles of Levee and 16 Flood Pumping Stations that protect Metro Louisville from Ohio River flooding. As the local FEMA floodplain administrator for the community we also manage both the FEMA floodplain ordinance and the local floodplain ordinance.

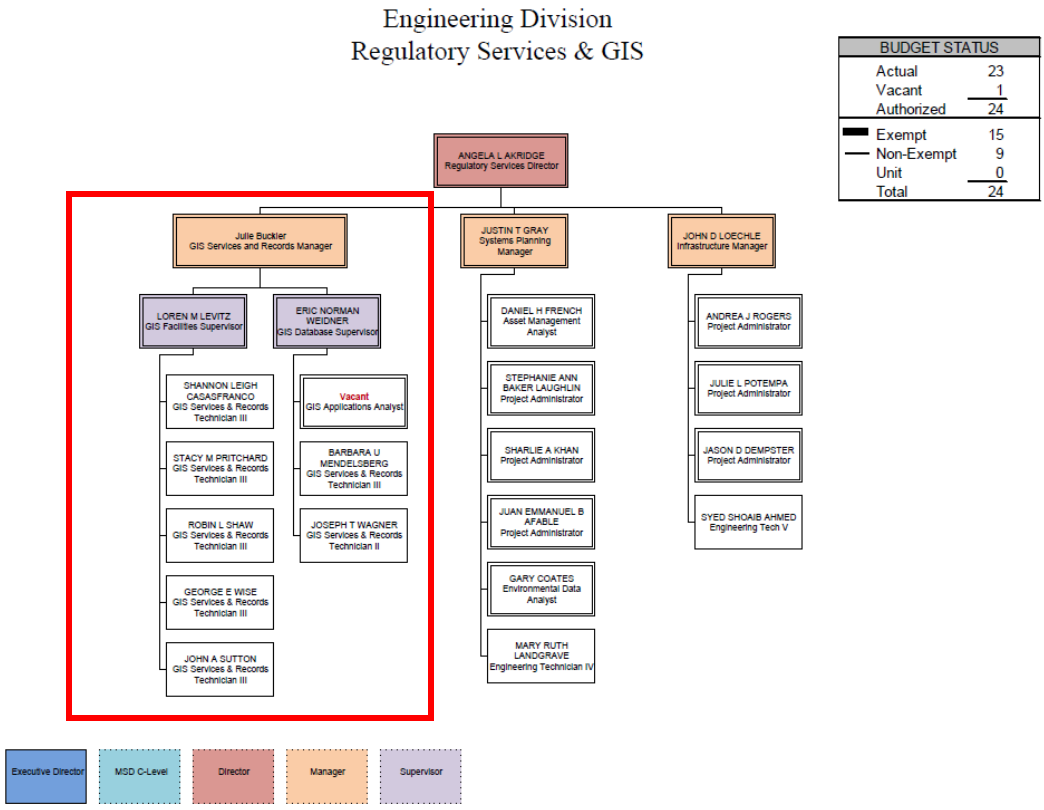
II. Summary of Mission/Purpose -

GIS Services and Records became a department in the fall of 1997. After the Flood of March 1, 1997 is was determined that a centralized GIS and Records department was needed to support the growing needs of MSD. We maintain more than 160 GIS data layers, provide system and user support for both eB (our imaging software) and Hansen. Some of the GIS data maintained includes, sewer mains and manholes, stormwater impervious areas, green infrastructure, hazardous materials storage, sanitary sewer overflows, floodplains, customer service requests, rain event hotspots, easements and capital project locations. GIS is utilized all throughout MSD. Engineering, Customer Relations, Operations, Legal, Industrial Compliance and Monitoring and Finance departments use GIS applications and GIS data every day.

III. The People of GIS Services and Records –

The GIS Service and Records department is made up of 10 staff members. Our newest employee started in 2010.





12

Advantages/disadvantages to the way your GIS is staffed/structured.

Advantages -

- As-built/GIS processes are connected
- Now part of Engineering

Disadvantages -

- Often are the last to get the information, but then the first place someone looks for the information. (more locational I think)

IV. Competencies of MSD GIS Services and Records

Competencies -

- Great at assisting other departments
- Dependable and take pride in what we do
- Work well as a team

Challenges -

- No succession Plan
- Lack of communication with management
- Little emphasis on training in the past

- Reorganization moved the technical support of eB to IT. Still feeling our way through who is responsible for what.
- Hiring of Hansen/MIDAS system support person divided the support tasks for Hansen. Again, we are still feeling our way through who is responsible to what tasks.
- Low moral due to audit, reorganization, changes to the evaluation process and One Water
- Loss of GIS programmer in reorganization - allowed us to automate a lot of processes

VI. Current and Future Projects

- Metadata updates of the MSD data layers in SDE
- Procedures updates of all MSD GIS Services and Records processes
- ArcGIS 10.2 upgrade
- Hansen 8.3 upgrade will allow for Mobile opportunities
- Staff Development Plan
- Capital Projects (again)
- Coordinate Capital Improvements (again)
- 3D representations of IOAP retention projects

VII. Equipment/Software –

Same as LOJIC

VIII. Current Uses Of and/or Dependencies On LOJIC Staff

Data Downloads - of GIS data for consultants working on MSD projects

Programming Support - MSD GIS programming functions were moved to LOJIC as part of the reorganization to help maintain specific LOJIC standards and consistent technology advances.

Base data updates -

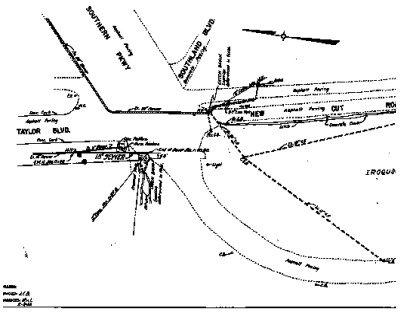
- Continued need in routine base data updates
- Regional base data will be needed if the Regional WQTC is built

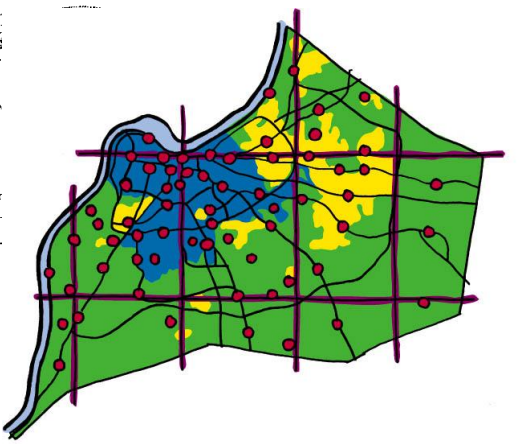
System updates - need to happen on a more routine basis. We fell too far behind in the last several years and are paying for it now.

IX. Future of GIS Services and Records

Continue to promote the use of GIS and eB through out MSD.
Continued eB support
Continued Hansen support
One Water ?
Advanced Asset Management

MSD GIS Services and Records
Who are we and what do we do?





the Department with three hats

Engineering Records
- eB
- asbuilt records storage
- Bids
- User support and training

GIS
- data editing
- GIS applications
- Mapping
- User support and training

Hansen
- Asset management
- Customer service requests
- Work Orders
- User support and training

Louisville & Jefferson County MSD

MSD
Metropolitan Sewer District

Who uses it? – GIS, eB and Hansen

- GIS Services and Records
- Engineering/RS
- Operations
- Maintenance
- Customer Relations
- Industrial Compliance and Monitoring
- Emergency Response
- Physical Assets
- Legal
- Revenue
- Infrastructure and Flood Protection
- IT

Engineering Records

•Began with Trimco in 1994. Started out as a document storage for Sewer/Drainage plans. Began scanning other documents for storage and fast retrieval. Documents include:

Sewer and Drainage Plans
Engineering Contracts
Service Requests
Work Orders
Easements
MSD property deeds
Vehicle Damage claims w/pictures
C.O.E. Floodwall/Levee
Records Storage Inventory Lists,
Water management plans (Site & Subd)
Consent Decree Documents, starting 2005
MSD Signs

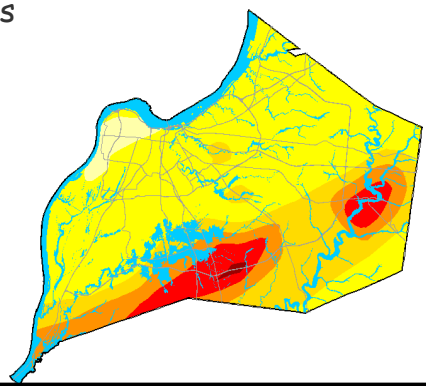
Red Books
Sewer and Drainage Atlases
CSO Fact Sheets
EPA exhibits
Firm Maps
Flood Ins Studies
LOMC
Manholes
Open Record Requests
O & M Manuals
SOP Manuals
Subdivision Plats

•2008-09 Metro Gov began using eB for Hansen -
License, Trade Apps, Building Apps, Case Apps, etc.

Now has capability to link documents so you get the whole picture, i.e. Sewer Rehab Projects and the Contract and the original as-builts

MSD meets the GIS world

- Charter member of LOJIC – 1985
- Flood of 1997 - Centralized GIS Support - GIS users spread throughout MSD, little or no coordination on projects



Louisville & Jefferson County MSD

Data Collected and Maintained by MSD

(160 published layers and growing)

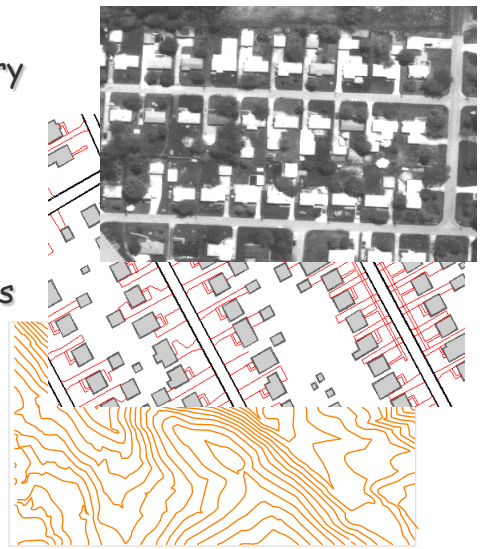
LOMC	Mowing	Catch Basins
IOAP	Rain Gauges	MSD Properties
CSO	Solution	Streams
Drainage	Closures	WMPD
DRSA	Storage Basins	Capital Projects?
ERICase	HotSpots	Vaults
FLDGATE	LE	Viaducts
FPS	Manhole	MSD Signs
SSA	Levee	PSC
Floodplains	Mjstream	Sewers
SPS	STP	Green Inf
HAZMAT	SSO	SCADA Alarms

Louisville & Jefferson County MSD

MSD
Metropolitan Sewer District

MSD uses our GIS for daily work…

- Centralized data repository
- Address matching and mailing lists
- Public access
- Spatial analysis
- Rapid response to requests for information
- Modeling
- Sewer tracing
- Maps, maps, maps…
- Data and more data…



Louisville & Jefferson County MSD

MSD

MSD's GIS Applications & Their Users

(just a sample)

- EGIS – first responders, Customer Relations
- GeoAdmin - GIS Services
- SRIAMS - Revenue/GIS Services
- HARP – MSD and Metro Government
- Classic Viewer – none Hansen users

Web Apps available to the public

- Mowing
- Floodplain Determinations
- IOAP Projects
- CSO/SSO locations

Louisville & Jefferson County MSD

MSD

All of this…
was not built in a day.

Louisville & Jefferson County MSD

Historical Moments

1946 -MSD created to provide sanitary sewer service for Jefferson County

1981 - Sewer explosion

1985 - LOJIC consortium created

1987 - MSD took over responsibility for drainage and flood protection

1989 – first installation of Hansen software (used by TV crews on 1 PC)

1994 – Trimco imaging system

1995 – Hansen begins to evolve

1997 – Flood of '97 - GIS Department Created

Louisville & Jefferson County MSD

the Evolution of Hansen

Louisville & Jefferson County MSD

MSD
Metropolitan Sewer District

1989 - first installation of Hansen Software

1995 - the Move to an Enterprise System Started
- MSD started a GIS sewer conversion project
- 30,000 + Engineering Records in Trimco
- 2,800 miles of sewers, 27 TP, 204 PS (on hand drawn atlas sheets)
- 200,000 property service connections in a different database

1997 – Sewer data main available in the GIS
Work Order System now available
Began the Drainage Conversion Project

Louisville & Jefferson County MSD

MSD
Metropolitan Sewer District

1998 – Migrated PSC and catch basin data to Hansen from Main Frame databases

2000 – Migrated Customer Service data to Hansen from CRS (Customer Request System) Louisville Metro Government SRs

2002 - Unified Plan Review and Permits Project with MSD and Louisville Metro
Still not done

2008 – Moved Metro Ops assets – PS and Small TPs from SAP for WOs

2013 – Hansen 8

What's next….?

MSD
Metropolitan Sewer District

Questions?

Louisville & Jefferson County MSD

MSD
Metropolitan Sewer District

Field of Today Self-Assessment Guide
Louisville Metro

I. Agency Name and Function

We are the City of Louisville Government. Our functions include citizen safety, city infrastructure such as sidewalks, road and traffic lights, providing necessary services such as waste pickup and vacant lot maintenance, administering permits; i.e. activities, new construction, etc. amongst many other, often mission-critical, services.

The diverse array of functions provided by our City departments and agencies directly affect citizens every day in every part of their lives.

II. Summary of Mission/Purpose -

Louisville Metro Government has a long history of Geographic Information System (GIS) use through the Louisville/Jefferson County Information Consortium (LOJIC) dating back to the late 1980's when the City and County were separate entities.

The current state of GIS efforts within Metro:

- Metro's business relationship with LOJIC is managed by MTS however MTS does not manage GIS for the enterprise. Currently, there is not a GIS governing body for the enterprise.
- Metro's relationship with LOJIC has been one where some Metro GIS resources have built strong relationships with LOJIC technical staff and other resources have not; there is no coordinated enterprise effort.
- Historically there has been no single point of contact or service level manager from LOJIC working with Metro.
- Strategic decisions on GIS direction and technology have been outsourced to LOJIC.
- Usage and skill levels throughout departments range from light users who view maps to heavy users performing in-depth analysis.
- Some departments use GIS for mission-critical functions such as public safety services and planning efforts, and city services.
- Training, procurement, maintenance, and deployment of GIS technology is largely carried out by LOJIC
- Louisville Metro Government's relationship with ESRI has been largely coordinated through LOJIC.
- The focus of GIS efforts remains divided into their respective divisions but could better leverage the technology with the coordination of idea sharing, workflows, methodologies, and training.

People (have LOJIC license)

Name	Agency/Department	Position Title
Coomes, Brad	APCD	Environmental Coord.
Dewitt, Billy	APCD	Environmental Super.
Frazar, Bryan	APCD	Info Systems Analyst
King, Michelle	APCD	Environmental Super.
Dyer, Jeremy	Community Serv & Revitalization	Program Coordinator
Humphries, Al	Community Serv. & Revitalization	Info Services Analyst
Stauffer, Curtis	Community Serv. & Revitalization	Grant Coordinator
Durham, Dennis	Election Center	
Grider, Dave	Election Center	
Robinson, Holly	Election Center	
Bottom, Jim	EMA	Emergency Mgmt Serv
Baltimore (Bullitt), Elaine	EMA/MetroSafe	GIS Specialist
Reynolds, Ron	EMA/MetroSafe	GIS Supervisor
Wilson, Julian	EMA/MetroSafe	GIS Specialist
Tully, Michael	EMS	EMS Manager
Livers, Terri	Fire Trustees	Exec. Fire Admin.
Harrison, Rick	Fire Trustees - Buechel Fire	Fire Chief
Longstreet, Andy	Fire Trustees - Middletown Fire	
Burks, Maisah	Health and Wellness	Epidemiologist
Hosch, Steve	Health and Wellness	Emergency Prep Planner
Janes, Rebecca	Health and Wellness	Intern
Martino, Ashton	Health and Wellness	Quality Improve. Coord.
Pallam, Haritha	Health and Wellness	Epidemiologist
Rock, Peter	Health and Wellness	Health Program Analyst
Sthapit, Swopnil	Health and Wellness	Intern-Food Hygiene
Vanderpool, Matt	Health and Wellness	Environ. Health Specialist
Davenport, Nick	LFPL	Computer Operator
Fitch, Claudia	LFPL	Library Assistant
Boyle (Wiseman), Carol	LMPD	Research & Development
Conrad, Ryan	LMPD	Crime Analyst
Corum, Jennifer	LMPD	Crime Analyst
Gillespie, Dan	LMPD	Crime Analyst
Masden, Donnie	LMPD	Planning & Tech Sgt.
Meagher, Matthew	LMPD	Admin. Services Lt.
Monroe, Brent	LMPD	Crime Analyst
Schroeder, Robert	LMPD	Admin. Services Mgr.
Leake, Jack	Louisville Fire	Network Admin.
Chen, Julienne	Mayor's Office - Bloomberg	Project Manager
Noll, Mark	Mayor's Office - Bloomberg	Project Coordinator
Sizemore, Steve	Mayor's Office - Louisville Loop	GIS Analyst

Ashley, Steve	Metro Parks	Supervisor 1
Boz, Milana	Metro Parks	Parks Coordinator 1
Canuel, Jason	Metro Parks	Assistant Director
Hilton, Larry	Metro Parks	
Knox, Bennett	Metro Parks	Parks Administrator
Lewis, Bryan	Metro Parks	
Waltman, Major	Metro Parks	Project Coordinator
Wilding, David	Metro Parks	Project Architect
Hamner, Jess	MTS	Applications Dev Coord.
Kessinger, Holly	MTS	Project Manager
Meador, Sharon	MTS	Applications Dev Coord.
Post, Ben	MTS	GIS Analyst
Render, Scott	MTS	E-Communications Mgr.
Brown, Christopher	Planning & Design	Planner 1
Dock, Joel	Planning & Design	Planning/Design Intern
Doyle, Matthew	Planning & Design	Planner I
Fogle, Cheryl	Planning & Design	Associate Planner
Johnson, Cynthia	Planning & Design	Historic Preserv Spec
King, Michael	Planning & Design	Planning Tech
Lauago, Andrea	Planning & Design	Management Assistant
Liu, Emily	Planning & Design	Planning & Design Super.
Lutz, Stephen	Planning & Design	Planner II
Reverman, Joe	Planning & Design	Planning & Design Super.
Thomas, Regina	Planning & Design	Planning Technician
Wagner, David	Planning & Design	Planner II
Wells, Lee	Planning & Design	Planning Tech
Dow, Greg	Public Works	CAD-GIS Technician
Eisinger, Rolf (John)	Public Works	Engineering Tech II
Gardner, Philip	Public Works	GIS Analyst
Marconi, Andrea	Public Works	Engineer II
Metcalfe, Andrew	Public Works	Engineer II
Richardson, Angela	Public Works	GIS Analyst
Williams, Rich	Zoo	Zoo Facilities Supervisor

In addition to those mentioned above the E-Gov team also connects with LOJIC during custom application development. That includes:

Gantner, Matt	MTS	Web Designer
Gotth-Olsen, Matt	MTS	Web Designer
Kron, Harry	MTS	System Architect
Reynolds, Mike	MTS	Database Administrator

IV. Competencies

Metro Competencies:

Competencies within Metro Government vary across the organization. In some departments we have highly trained and skilled analysts that use GIS 100% of their time to perform data collection, layer creation, asset maintenance, analysis, professional grade map production and web map publishing. These departments include Public Works, Community Services and Revitalization, Public Health and Wellness, Louisville Fire, LMPD, Planning and Design, Economic Growth and Innovation, and APCD. Other departments, including APCD, Codes and Regulations, Metro Parks, Louisville Zoo, and some Public Works employees, use GIS for just a small portion of their work such as producing a quick map for use in meetings or relying on GIS data for operational work or asset maintenance.

Some of our biggest weaknesses are the lack of training on cartography best practices and limited or no QC knowledge for the datasets that they are submitting to the partnership. LOIJC provides some QC support before the datasets get moved to the production SDE database.

E-Gov Competencies:
The E-Gov team is very well versed in Web Technologies and emerging trends in the web/app space. We focus on providing quality services to help the citizen do as much online as possible. Our team focuses on building great end user experiences. The team works well as a group and works to come up with good designs for the end user. We are good at providing these services around the clock.

To date we have not focused on mapping applications, only doing map applications occasionally. Therefore our team is not strong in mapping applications, as since the last time we built one, the technology changed. We believe there are many more needs for mapping applications, both internally and externally and therefore will need to focus more on this technology. We have worked with ESRI to create training plans for our developers.

We as developers are not as familiar with the GIS toolset and therefore get hung up on some mapping terms that LOJIC and other partners may not as they work directly with ESRI tools.

We have one GIS analyst on our team who is very familiar with GIS desktop tools and helps other departments by generating maps at their request. We are growing his skill set to include ArcGIS online and to help us with the steps needed to publish a mapping service.

MetroSafe Competencies:
- The GIS Team for MetroSafe is very skilled in maintaining the emergency 911 Street Addresses and Street Centerline database, processing changes and notifying proper agencies.
- Our Key competencies would be maintaining the emergency 911 street addresses and street centerlines database for Louisville/Jefferson County.
- A weakness is analysis of emergency situations – ability to quickly provide aerials of the area, mining data for deciding what schools or nursing facilities would be impacted by the event, ability to cross borders for information.
- Need to improve Ad-hoc query capability of existing geospatial data and display.
- No common platform to share results of any geospatial query, especially open records requests.
- Data conversion from ESRI to GeoMedia for MetroSafe CAD system is arduous.

VI. Current and Future Projects

Metro, as a whole, is using GIS in a wide variety of ways such as web map development, computer aided dispatch for emergency services, and spatial analysis and statistics. There are a large number of users that benefit from GIS every day. For example, agencies and departments regularly make and analyze maps and citizens view our maps on either MapIt or on a department's web page.

LFD is using GIS to report where calls for runs are, where there might be clusters of runs or fires and to find the best place to locate firehouses. LFD could really benefit from using GIS to know where all shut off valves and gas lines are as well as the floor plans and occupant capacity as they approach the burning structure. This need is currently unmet and would benefit from further study to determine the optimal way to meet the need.

LFD is responsible for contributing data to LOJIC and consuming data through software called Firehouse as well as reaping the benefits from the EMA CAD system. The data from CAD gets the responders to the scene and also pushes data to Firehouse so that reports and inspections can be managed and completed.

LMPD is using GIS to report crime statistics with the hope that analyzing the statistics over time and place could aid in preventing crime. Each week they hold CompStat meetings and go over the data collected through GIS. To prepare for this meeting, a team of people analyze data, run statistical reports, and create maps that aid in presenting that data to the group. Seeing where crimes are happening helps them schedule officers for work and shows them where they need to focus their presence. LMPD has created their own data silo by making a copy of LOJIC data so that if the LOJIC system or the network connection goes offline, they are still able to produce their maps and reports. They also have Esri ArcGIS Desktop licenses so they do not have to rely on a remote Citrix connection to analyze their data. Future efforts include deploying an internal map for officers to see geospatial data in real time on their mobile data terminals. LMPD is also strengthening their predictive analysis toolset by adding more powerful software that will consume local data back to the previous 5 years. This data can help show trends in crime throughout the county.

LMPD makes use of various GIS tools and software:

- Accessing LOJIC's SDE database and creating some GIS products using Citrix
- Accessing LOJIC's SDE through a direct connection
- Copying LOJIC data once a week and storing on LMPD's own server
- Maintaining standalone ArcGIS Desktop software
- Maintaining standalone ArcGIS Server
- Creating and maintaining custom scripts for data retrieval and delivery
- Creating and presenting spatially derived statistical data and maps for CompStat
- Crime prediction analysis and mapping
- Special event planning mapping
- Historical crime mapping
- iLeads for mapping

EMS is consuming data from LOJIC and using CAD data to overlay and conduct analysis to improve performance, response times and preparedness.

CSR performs many spatial analyses using their own data as well as LOJIC data. They are building datasets for use in their analysis and wanting to share data that might be relevant to other GIS users but are, admittedly, lacking the training. CSR is also creating project location maps for visual aids and pulling Hansen data for use in their analysis.

PHW utilizes GIS by performing various types of analysis to include vital stats, hospital data, and mosquito hotspots and treatment. There are several different inter-departmental groups that use GIS. There are a large number of users that are making use of Hansen/HARP as well as the Metro Map Viewer that is based on the Hansen/HARP map. PHW is using data from the Census and LOJIC as well as creating their own datasets.

Parks has created and is maintaining a large 24,000 point tree inventory. This data is maintained by GPS and software called Tree Keeper. Tree Keeper is work-order management software that is specific for tree maintenance. Supervisors in the field can access the database and complete their work orders. Metro Parks has other assets that could be tracked using GIS. They have contributed park boundary data to LOJIC in the past but the data is currently obsolete. This data is used in a variety of maps created by other agencies.

PWA has been using GIS for a number of years in a wide variety of ways. Their most current endeavor is to create their own web maps with the use of ArcGIS Online; i.e. a live interactive permitted road closures map and a live interactive series of maps for the Mayor's Hike Bike and Paddle. They have assisted in creating maps with LMPD for events such as Thunder over Louisville and the Kentucky Derby. PWA relies heavily on GIS for analysis. Some of the most complex projects include pedestrian and cyclist crash hotspot analysis maps and a series of maps that show unfunded sidewalk service requests. The unfunded sidewalk services request maps have evolved into hotspot maps as well. PWA has also created and published a consumer grade folding bike network map for cyclists to use in travelling around the county. PWA has also performed drainage analysis using hydrology models to plan for proper roadway drainage.

For the SWMS division, the PWA GIS team has performed analysis in order to evaluate waste collection times, tonnage and overtime. The goal for these maps was to evenly distribute times and tonnage in order to cut back on overtime. They have also provided maps and data for use in the Bloomberg recycling initiative. This data includes an exhaustive collection of property class types and adding business types to an already created building footprint dataset.

PWA contributes a number of datasets to LOJIC such as snow routes, bikeways, solid waste routes and several asset datasets used in Hansen. Other datasets include a fully updated sign inventory, digitized alleys, and digitized sidewalks.

Other PWA GIS duties include Snow Command; live tracking of snow removal operations. The team updates a live interactive web map that allows management to track operations and citizens to find the safest routes during slick driving conditions.

There are several other agencies and departments that are either using GIS in some degree or desiring to use the technology to improve efficiency or save money. Those groups include the ***Zoo*** who are trying to create a facility inventory for maintenance and the Urban Forester who has created a tree database which could benefit from mapping those tree locations. ***PD***, ***EGI***, and ***APCD*** are performing GIS functions with ArcGIS Desktop via Citrix from LOJIC and Hansen/HARP.

There are a large number of Hansen/HARP users within Metro Government. Without knowing it, these users are all GIS users by using this software and performing data queries on the map. Hansen relies on a spatial database in order to function, whether it's a permit location or work needed on a city owned asset such as traffic signals or streets.

MTS E-Gov Current & Future Projects

- Change our Junk Notification system to use LOJIC data and resources.
- Bringing more mapping data available via our Open Data platform
- Update MapIt.louisvilleky.gov to make it more user-friendly and responsive. Technically, it also needs to be updated to the current ESRI Javascript API.
- We want to update the public facing Google Maps to Maps using ESRI and LOJIC to give the users a consistent user experience.

Two members of our staff attended JavaScript API training and so this can be done in house.

Our concern on these projects is the amount of time needed to publish these items to a map service. This includes time for meta-data, pushes to promotion across all environments, and changes needed due to software upgrades. For us to publish a map application; it takes at a minimum 3 members of the LOJIC staff (one of them has no back up); and at least 2 members on our team. Timing is hard to determine and communicate to clients on our side as we have to coordinate with all parties on the LOJIC side and we don't know their work load. We asked for small changes to a service and LOJIC was unable to begin working on it for 4 months and then only gave us a day and a half to work on it or they would have to move on to other things.

Other issue is the nightly downtown at 2:00am and other unexpected outages, outages are generally communicated in advance, but sometimes come with little notice and then we have to update several web apps to accommodate these downtimes. As we host the public website for the City we have users who access the site at all times of the day and night.

Also our applications are built for the web general citizens. LOJIC's data is stored in State Plain projections – this has caused problems for our applications in the past as we have to conversions to this projection from Web Mercator or vice versa.

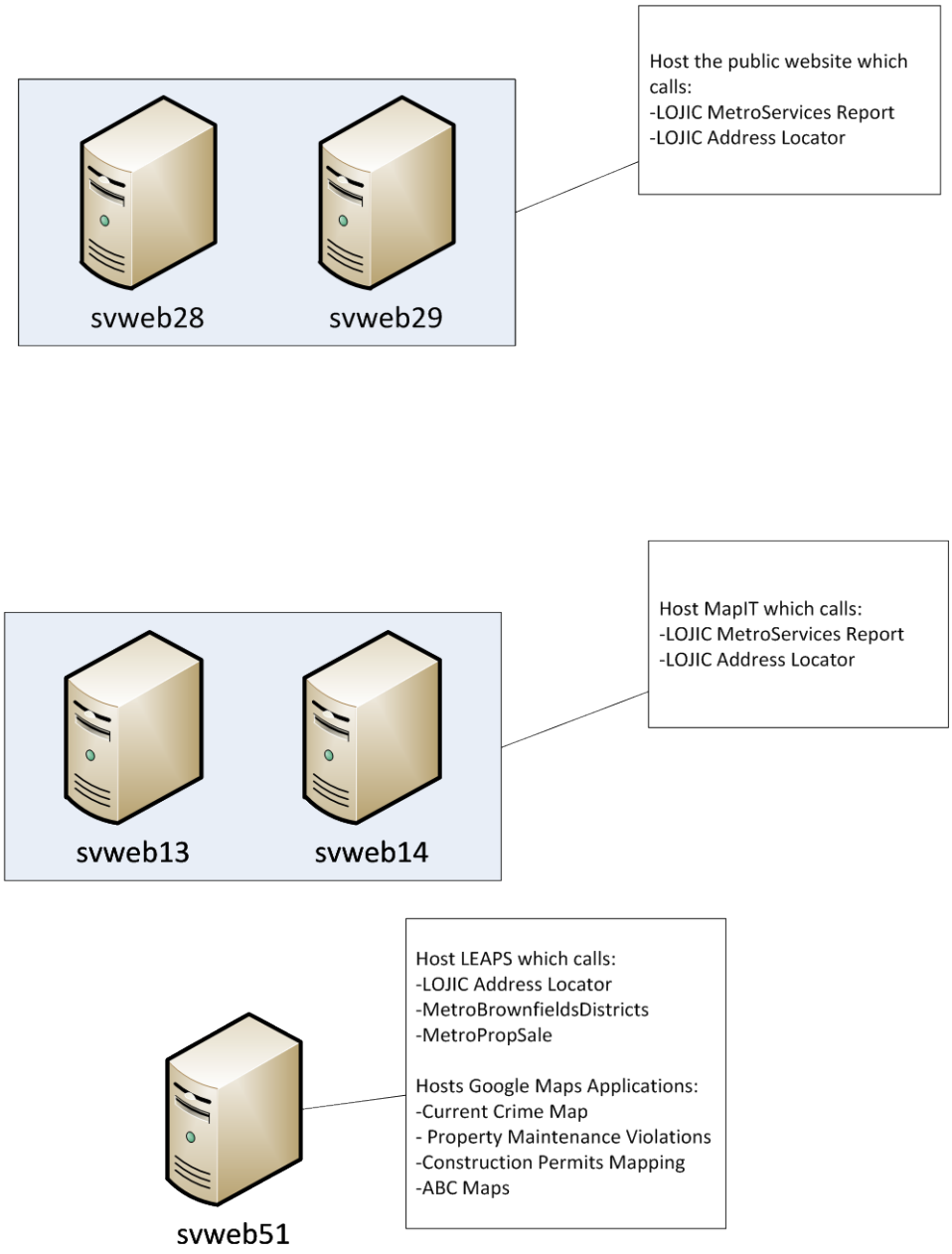
MetroSafe Current & Future Projects

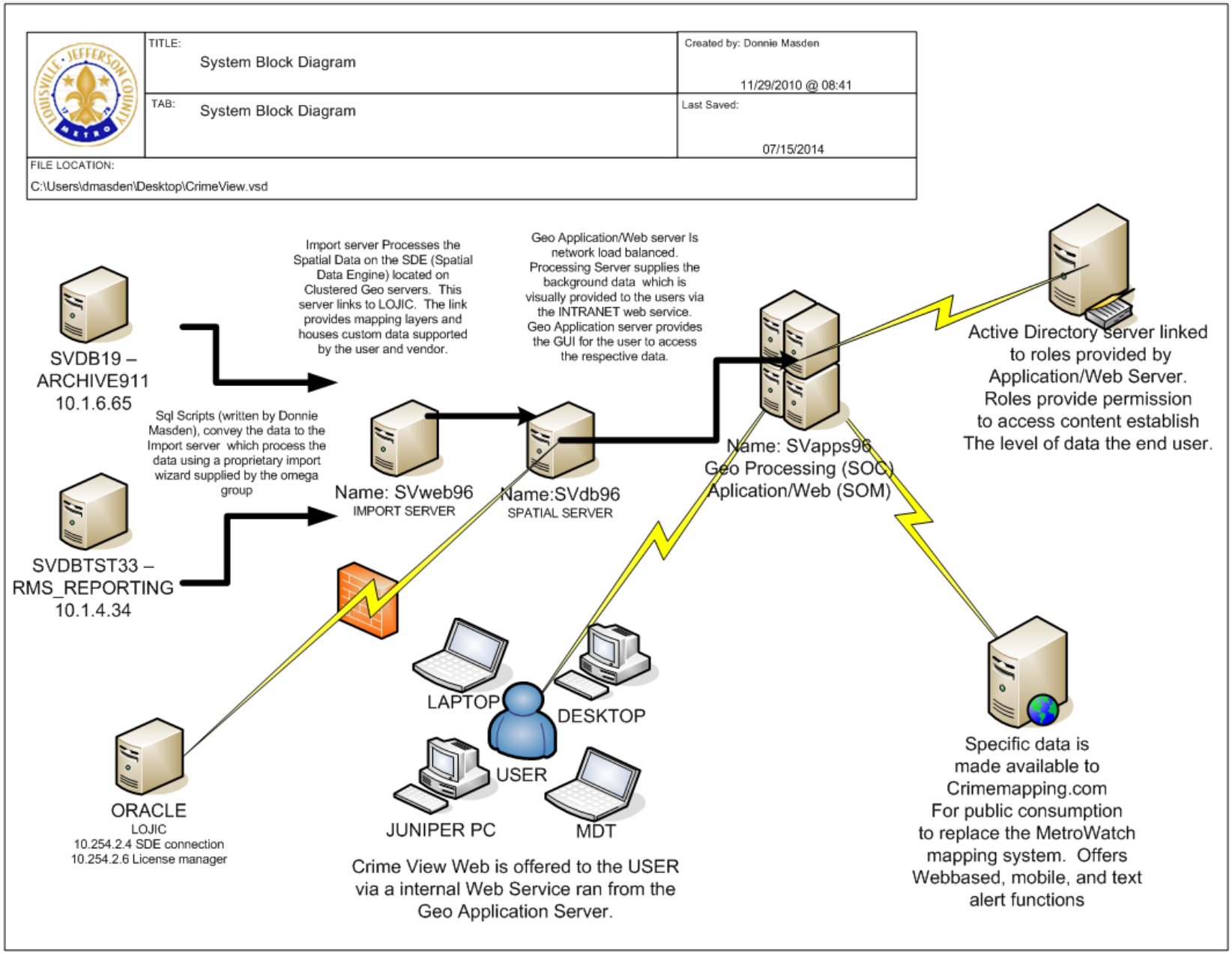
- MetroSafe will be delivering CAD services to regional public safety answering points, including outside of Jefferson County. Therefore, GIS information for surrounding counties must be incorporated into CAD maps.
- Emergency Management application Geospatial in nature – layers for EMA only with proximity tools to analyze facilities in the affected areas. Application audience is for non-GIS professionals.
- LOJIC *would* play a role in these projects, helping with the tools and how to set up the data accordingly.

VII. Equipment/Software

MTS does not have any GIS-related software. We currently use LOJIC's ArcGIS server to host the ESRI platform which our power users access and our map services. Our applications are hosted on internal web servers and call to LOJIC's and Google Maps API servers for mapping information.

E-Gov GIS Architecture

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System Block Diagram
Created by: Donnie Masden
11/29/2010 @ 08:41
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System Block Diagram
Last Saved:
07/15/2014
FILE LOCATION:
C:\Users\dmasden\Desktop\CrimeView.vsd
Import server Processes the Spatial Data on the SDE (Spatial Data Engine) located on Clustered Geo servers. This server links to LOJIC. The link provides mapping layers and houses custom data supported by the user and vendor.
Geo Application/Web server Is network load balanced. Processing Server supplies the background data which is visually provided to the users via the INTRANET web service. Geo Application server provides the GUI for the user to access the respective data.
SVDB19 – ARCHIVE911 10.1.6.65
Sql Scripts (written by Donnie Masden), convey the data to the Import server which process the data using a proprietary import wizard supplied by the omega group
Name: SVweb96
IMPORT SERVER
Name:SVdb96
SPATIAL SERVER
Name: SVapps96
Geo Processing (SOC)
Aplication/Web (SOM)
Active Directory server linked to roles provided by Application/Web Server. Roles provide permission to access content establish The level of data the end user.
SVDBTST33 – RMS_REPORTING 10.1.4.34
LAPTOP
DESKTOP
USER
JUNIPER PC
MDT
ORACLE
LOJIC
10.254.2.4 SDE connection
10.254.2.6 License manager
Specific data is made available to Crimemapping.com For public consumption to replace the MetroWatch mapping system. Offers Webbased, mobile, and text alert functions
Crime View Web is offered to the USER via a internal Web Service ran from the Geo Application Server.

VIII. Current uses of and/or dependencies on LOJIC and LOJIC staff.

Metro currently has 75+ users that directly connect to ArcGIS Desktop via Citrix. Users are mostly connecting to create data, perform analysis, or create map products.

All users have been notified that they can contact LOJIC directly for technical support and training.

There are several Metro employees who are not GIS users but are using applications from LOJIC such as the LOJIC Map or HARP/Metro Map Viewer.

E-Gov uses of LOJIC

E-Gov uses LOJIC's development staff to help publish map services for our consumption in applications. We use LOJIC's database staff to help in publishing our data layers for the map services.

Metrosafe uses of LOJIC

- We currently update and maintain 20 or more layers including Street Centerline, Site Addresses, Zoning Layer, Day Care Centers etc. using standard tools like ArcGIS desktop and custom tools like Editor Module.

What would the ramifications for your organization be if LOJIC was not there? How would your organization compensate?

If LOJIC ceased to exist, Metro would lose applications such Metro MapIt, Hansen, and the Snow Status Map. Metro would also lose the web mapping services that feed those applications. Applications would have to be recreated in other forms such as Google or Metro would have to acquire its own licensing and servers or purchase services such as ArcGIS online. These apps may include data from other partners. New partnerships with other LOJIC partners would have to be made to share data.

Metro is dependent upon LOJIC for ESRI software procurement and implementation, server procurement and maintenance, database administration, procurement of aerial imagery, planimetric/topographic data, and technical support. In addition, they offer professional map production services and training as needed. Various agencies are consuming these resources on a regular basis. Today, 75+ users are accessing ESRI tools to create and analyze data, and produce maps.

Metro users would lose all ability to create, analyze, and map data until those resources could be procured. Users would also lose technical support for a variety of functions anywhere from creating data to publishing web mapping services.

IX. Future LOJIC and GIS Needs and Wants

Overall Needs and Wants

- Crime Analysis including but not limited to social media feeds.
- Mapping Trees in Louisville
- More users with ability to create Web Mapping Services
- Training
- Creating more Maps and Apps

MetroSafe Future Needs and Wants

What opportunities do you see for LOJIC and GIS in general to best serve your organization?

- We can see ArcGIS Online being a future need:
    - Quickly map data and add analytical capabilities.
    - Easily create maps that can be shared with the public/media or ad hoc map requests for internal use-one example: MetroSafe quickly mapping road closures due to flooding.
    - Special event and damage assessment mobile workflow using smart phone and tablet devices for emergency personnel in the field.
- LOJIC really is a big part of EMA/MetroSafe in helping our community to become the best.
- Geospatial data is the heart of all EMA/MetroSafe critical systems.

E-Gov Future needs and wants:
Opportunities for LOJIC and GIS in general to best serve our organization:

- LOJIC should explore how it can support and contribute with respect to the changing nature of the GIS environment, and promote and nurture the utilization of our community's GIS resources as they relate to cloud capabilities, such as ArcGIS Online. We are getting more and more requests for online maps for the public and our own internal users. These maps don't need to be made to the same level of precision as LOJIC's other agencies' data. We need to work together to determine the best solution to this problem.

- A more streamlined workflow and communication process.

- Enable more formats on ArcServer for existing maps (WMS)

- Clear explanation of why LOJIC is a superior solution, more information, more accurate, etc. – this would be helpful to give to Agencies and new staff members.

- More open to new ideas, such as Open Data, ArcGIS online

- Additional resources, both people and servers

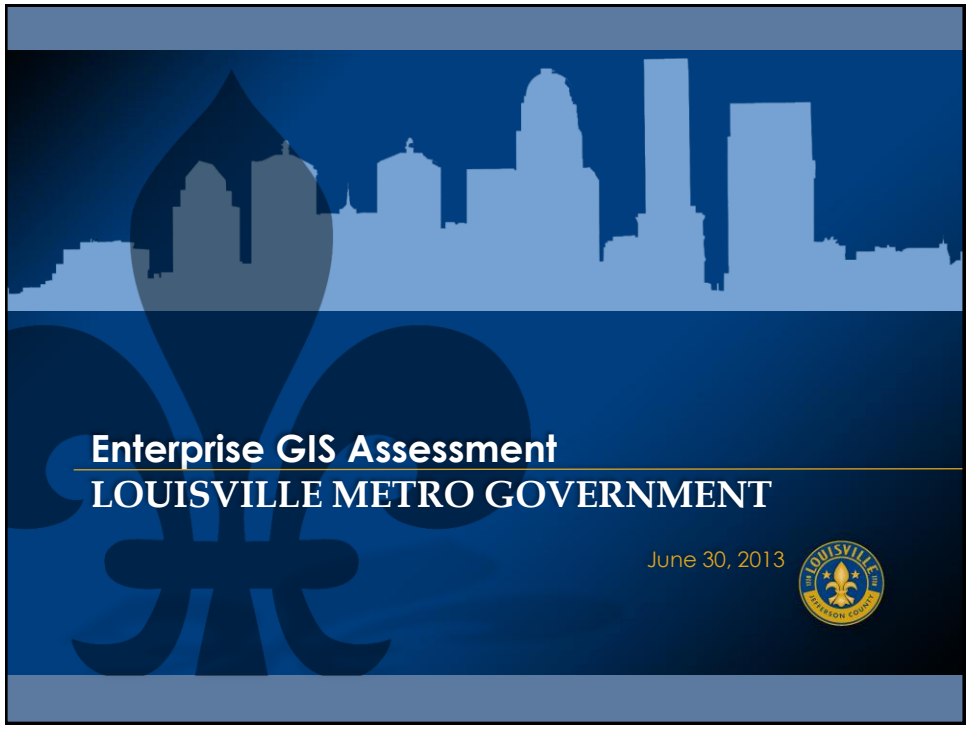
What barriers/threats do you foresee with the current and future GIS climate?

- The biggest barrier/threat is there is no centralized GIS governance within Metro to focus on enterprise GIS strategy and methodology.

- The next biggest barrier/threat with the current and future GIS climate, at least locally, is tied to the struggle to define the appropriate relationship between LOJIC and Louisville Metro Government, but the Strategy and Innovation team in and of itself is a good start to addressing the need to define these issues and the appropriate roles of each. Also, as the opportunities for the use of GIS continue to grow, there may be questions pertaining to the adequate commitment of personnel and other resources necessary to take advantage of these opportunities and be able to keep pace with the changing environment, by both Metro and LOJIC. This of course will involve funding issues.

- Ability of our organization to fully use all the facets of the ESRI tool that is provided, our agencies don't realize what we have available and therefore will chase after other tools that look easier and are more familiar to them. Recent efforts of ESRI have helped with this but we haven't had time to work to implement some of those tools, as we have staffing issues ourselves.

- Funding is always a threat to these endeavors
- OpenStreetMaps (community sourced information)
- Openness of data (shareability)



Mission Purpose

Louisville Metro Government has a long history of Geographic Information System (GIS) use through the Louisville/Jefferson County Information Consortium (LOJIC) dating back to the late 1980's when the City and County were separate entities.

The current state of GIS efforts within Metro:

- Currently, there is not a GIS governing body for the enterprise.
- Strategic decisions on GIS direction and technology have been outsourced to LOJIC.
- Usage and skill levels throughout departments range from light users who view maps to heavy users performing in-depth analysis.
- Some departments use GIS for mission-critical functions such as public safety services and planning efforts, and city services.
- The focus of GIS efforts remains divided into their respective divisions but could better leverage the technology with the coordination of idea sharing, workflows, methodologies, and training.

Staffing

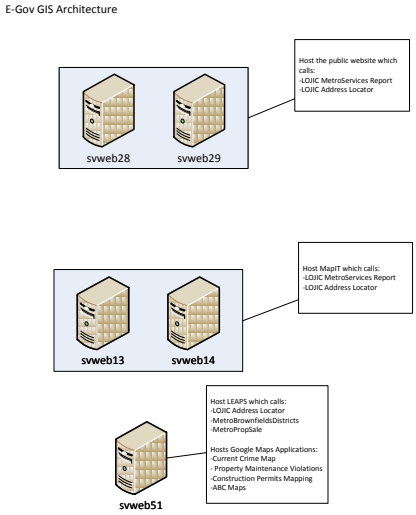
- Metro has 75 licensed users
  - Varying skill set
- Metro has a team of application developers
- Additional City Wide users who access other GIS applications

Competencies & Weaknesses

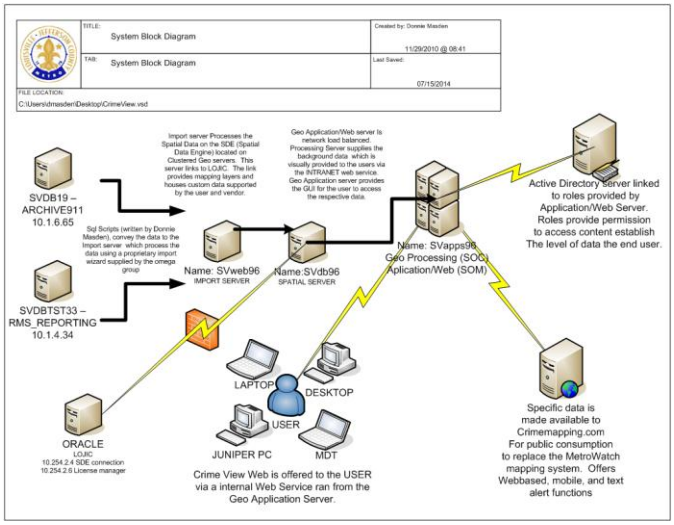
Competencies
- Creating and Editing Layers
- Map Creation
- Web Technologies
- User Experience Design
- Source Data Knowledge

Weaknesses
- Creating and Editing Layers
  - Meta Data
- Map Creation
- Consistency
- Lack of regular development
- Communication
- Data Sharing
- ESRI and GIS Fundamentals
  - Licensed and Non-Licensed Users
- Lack of GIS Governance

Equipment Software



Equipment Software



Current Uses Of LOJIC Staff

- Metro currently has 75+ users that directly connect to ArcGIS Desktop via Citrix. Users are mostly connecting to create data, perform analysis, or create map products.
- All users have been notified that they can contact LOJIC directly for technical support and training.
- There are several Metro employees who are not GIS users but are using applications from LOJIC such as the LOJIC Map or HARP/Metro Map Viewer.
- Use LOJIC to publish map data to a service for online consumption.
- Use LOJIC's REST Endpoints for address validation and other information.
- Consulting services for best practices tools and methodologies.
- App Creation and maintenance.
- Map Creation.

Life without LOJIC

- Existing map applications would have to be rewritten
- Assume managing ESRI ELA
- Assume training for all Metro GIS users
- Need new aerial, planimetric and topo services
- Purchase and maintain our own servers
- Negotiate partnership data sharing agreements for
  - TARC
  - State
  - PVA
  - Hospitals
  - Water Co.
  - MSD

Future LOJIC & GIS Needs & Wants

- More users with ability to create Web Mapping Services
- Training
- Creating more Maps and Apps
- Visual Mapping of Source Data, including Crime Analysis, Trees
- More open to new ideas, such as Open Data
- ArcGIS online
- Additional resources, both people and servers

Barriers & Threats

- No GIS Governance
- Current Relationship with LOJIC and the City
- Ability to fully use all the tools available with ESRI
- Funding

Questions

LOJIC Strategy Innovation Discovery Brief

Appendix 3

Survey Results from:

Internal LOJIC Partner/Licensee Users

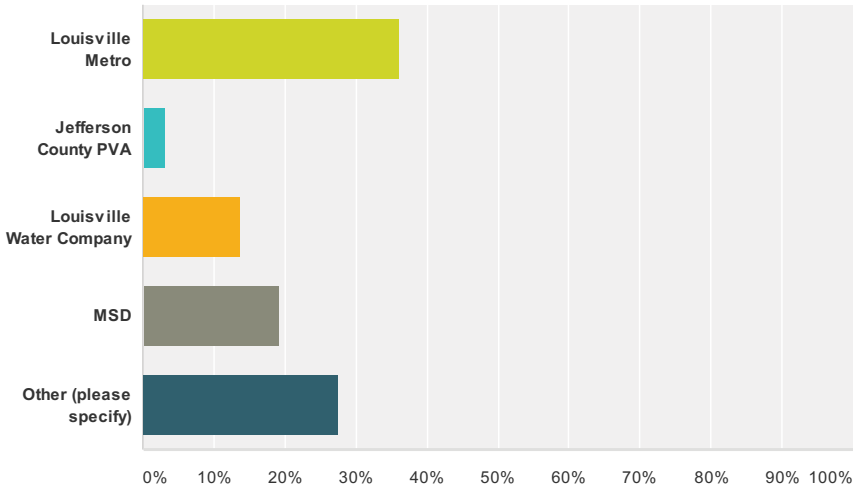
External/Public LOJIC Users

LOJIC Strategic Innovations Internal Survey

94/133 responses or 71% response rate.

Q1 What agency do you work for?

Answered: 94 Skipped: 0



Answer Choices	Responses	
Louisville Metro	**36.17%**	34
Jefferson County PVA	**3.19%**	3
Louisville Water Company	**13.83%**	13
MSD	**19.15%**	18
Other (please specify)	**27.66%**	26
Total		**94**

#	Other (please specify)	Date
1	Center for Neighborhoods	8/15/2014 10:52 AM
2	KIPDA	8/15/2014 9:01 AM
3	Buechel Fire Protection District	8/15/2014 8:41 AM
4	Jefferson County Clerk's Office	8/15/2014 8:18 AM
5	Louisville Free Public Library	8/14/2014 4:10 PM
6	Bullitt County Planning & Zoning	8/13/2014 10:38 AM
7	TARC	8/13/2014 8:13 AM
8	JCCO Elections	8/12/2014 12:42 PM
9	Bullitt County Emergency Services	8/12/2014 8:42 AM
10	Oldham County Fiscal Court	8/12/2014 8:41 AM
11	U.S. Army Corps of Engineers - Louisville District	8/11/2014 10:06 AM
12	TARC	8/11/2014 8:17 AM
13	JCPS	8/8/2014 9:50 PM
14	Seven Counties Services	8/8/2014 3:25 PM
15	FBI	8/5/2014 12:23 PM
16	Tarc	8/5/2014 8:22 AM
17	Suburban Fire	8/4/2014 4:56 PM
18	Middletown Fire Protection District	8/4/2014 11:32 AM
19	Jefferson County Clerk Election Center	8/4/2014 10:40 AM
20	JCPS	8/4/2014 10:14 AM
21	UofL	8/4/2014 10:09 AM
22	Metro Health and Wellness	8/4/2014 10:06 AM
23	UofL	8/4/2014 9:01 AM
24	JCPS	8/4/2014 8:27 AM

25	JCPS	8/4/2014 8:17 AM
26	Courier Journal	8/4/2014 7:56 AM

Q2 What are your primary work duties and functions?

Answered: 94 Skipped: 0

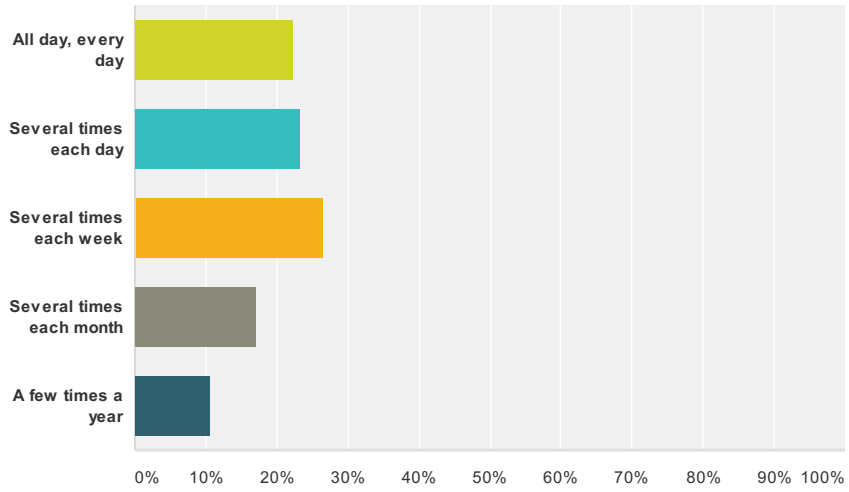
#	Responses	Date
1	Geospatial and statistical analysis	8/15/2014 10:52 AM
2	Reviewing development plans for Planning & Design Services	8/15/2014 10:41 AM
3	Manage GIS staff Perform spatial analysis using ArcGIS Desktop and provide maps/data to office administration and various departments	8/15/2014 9:02 AM
4	Support planning efforts with the creation maps and data analysis for different applications, maintain databases, and collect data in-house and in the field, and quality control. We have a wide variety of planning areas that include transportation, water and wastewater (outside of Jefferson County), assisting local governments in multiple facets of government, aging adult services, economic development and just about anything else our counties need for data or planning that they need extra assistance to complete.	8/15/2014 9:01 AM
5	Life Safety, Incident Stabilazation, and Property Conservation	8/15/2014 8:41 AM
6	Manager of Infrastructure Records	8/15/2014 8:30 AM
7	Programmer/Analyst	8/15/2014 8:18 AM
8	VERIFY DEED, WORK PLATS, MAINTAIN MAPS	8/15/2014 8:16 AM
9	Provide computer support for LFPL computers system-wide and compile reports for management.	8/14/2014 4:10 PM
10	GIS	8/14/2014 7:46 AM
11	Updating and digitizing our Zoning Map	8/13/2014 10:38 AM
12	- Provide support for current and long-term transportation planning activities and projects. - Provide support for scheduling efforts. - Manage and analyze performance data.	8/13/2014 8:13 AM
13	Project Management of affrodable housing developments. Everything from project application reviews to occupancy of units.	8/12/2014 3:36 PM
14	Mapping and Statistics	8/12/2014 12:42 PM
15	Urban Forester-protect and enhance the urban tree canopy of Louisville	8/12/2014 11:04 AM
16	gis tech	8/12/2014 9:45 AM
17	Development review, crafting policy on many issues, coordinating the Idle Free and Grow More Mow Less/Lawn Care for Cleaner Air programs, Chair of the Regional Mobility Council	8/12/2014 8:51 AM
18	project management	8/12/2014 8:47 AM
19	911 Coordinator	8/12/2014 8:42 AM
20	GIS Manager	8/12/2014 8:41 AM
21	Planning department supervisor	8/12/2014 8:34 AM
22	address assignment and mapping	8/11/2014 11:02 AM
23	- GIS Team Leader - GIS Specialist - National Levee Database POC	8/11/2014 10:06 AM
24	Plan Revier	8/11/2014 8:31 AM
25	engineering, project management	8/11/2014 8:28 AM
26	Analysis of existing operations and ridership, planning for future transit service	8/11/2014 8:17 AM
27	Urban Forestry	8/11/2014 6:33 AM
28	Infrastructure Project Administrator,	8/10/2014 10:11 PM
29	GIS teacher	8/8/2014 9:50 PM
30	Civil Engineering Consultant- on Design & program management projects for MSD	8/8/2014 4:37 PM
31	Project management and strategic planning for multi-modal transportation planning.	8/8/2014 4:31 PM
32	GIS for SWMS and data analysis.	8/8/2014 3:56 PM
33	Community mental health and substance use prevention and treatment	8/8/2014 3:25 PM
34	addressing, street centerlines, zoning, subdivisions	8/8/2014 3:21 PM
35	Create and edit data.	8/8/2014 3:19 PM
36	Supervise team that reviews development proposals requiring action by the Louisville Metro Planning Commission and Board of Zoning Adjustment.	8/8/2014 3:04 PM
37	Ms4 management	8/8/2014 2:34 PM
38	Sanitary sewer and stormwater capital project management.	8/8/2014 2:00 PM
39	editing, research & mapping	8/7/2014 7:49 AM
40	Street Addressing Street Centerlines Creating Maps	8/7/2014 7:36 AM
41	A variety of urban planning duties	8/6/2014 4:16 PM

42	GIS Analysis; Mapping, hydraulics, planning	8/6/2014 10:12 AM
43	write and revise policies, create and revise forms, update public website, create maps for coverages and court, conduct research	8/6/2014 8:01 AM
44	Manage GIS databases	8/5/2014 2:52 PM
45	Parcel Mapping using deeds, Subdivision plats and other recorded documents.	8/5/2014 12:23 PM
46	Assist with investigations.	8/5/2014 12:23 PM
47	All things technology related.	8/5/2014 12:12 PM
48	Planning Manager, Modeling, Mapping, Regulatory Support, Data Analysis and Reporting	8/5/2014 11:24 AM
49	Project management, clerical duties	8/5/2014 10:24 AM
50	Scheduling, geocoding	8/5/2014 8:22 AM
51	Manage Flow Monitoring Program at MSD and report on environmental compliance	8/5/2014 8:18 AM
52	Plan review	8/4/2014 7:34 PM
53	IT manager. As it relates to GIS, assist with LOJIC updates to LWC and maintain the GiS apllication and database servers.	8/4/2014 7:26 PM
54	Part-time administrative support for fire districts and fire organizations.	8/4/2014 4:56 PM
55	creating maps	8/4/2014 4:09 PM
56	Federal grants management and reporting, policy analysis and planning	8/4/2014 4:05 PM
57	Supervisor of GIS: Responsible for supervision of the Geographic Information Systems (GIS) work group. Responsible for organizing the development and support of GIS applications company-wide; and developing creative use of GIS tools and techniques for data collection, maintenance, analysis, and display to improve infrastructure functions and related utility operations. Manage Mobile GIS Solutions and provide technical support to field crews Still have many duties of GIS analyst: Provide spatial analysis products to internal and external customers.	8/4/2014 4:04 PM
58	entering GIS info	8/4/2014 3:57 PM
59	Application and web development	8/4/2014 3:13 PM
60	Engineering design	8/4/2014 3:13 PM
61	project management; use of data to identify hotspots and potential solutions	8/4/2014 3:09 PM
62	Application Development	8/4/2014 3:08 PM
63	Drafting	8/4/2014 3:01 PM
64	Mapping and data updates/corrections for infrastructure.	8/4/2014 2:58 PM
65	Surveying and Mapping	8/4/2014 2:50 PM
66	maps, flood plain, property information	8/4/2014 12:44 PM
67	data analysis, internal consulting, performance analysis	8/4/2014 12:22 PM
68	Data analysis, disease investgation, and GIS mapping and analysis of health data	8/4/2014 12:00 PM
69	Assitant Chief - Safety, planning, performance measurement, emergency response	8/4/2014 11:32 AM
70	GIS Analyst	8/4/2014 11:12 AM
71	Regulatory & Asset Risk Management	8/4/2014 10:45 AM
72	Precinct & District map creation, maintaining Residential Street Book, Assisting clerks with precincting difficult voter reg cards, Selling maps to candidates and campaigns, Assisting with ballot creation, Maintaining legislative index and other documents for in-house use, Other duties as assigned...	8/4/2014 10:40 AM
73	Coordinating the development and administration of software applications for the Louisville Metro Air Pollution Control District	8/4/2014 10:23 AM
74	Planning tech: Filing, answering questions about zoning, mapping, answering computer questions, archiving audio & video of meetings. (also update several LOJIC layers when possible)	8/4/2014 10:18 AM
75	The general purpose of my work is to coordinate district-wide GIS efforts, primarily focusing on Transportation Services. This includes building and maintaining spatial databases with student data, bus route data, facilities data, school boundary data, and any other pertinent school district data. In order to keep our mapping capabilities up-to-date, I must utilize the most current LOJIC data for street centerlines, address files, and all other pertinent county data. With all of the spatial data that I oversee, I have the ability to develop specific applications not only for Transportation Services, but also to share data with school administrators and parents. Recently, I worked to develop our new, more customer-friendly Bus Finder, a web mapping module that automatically assigns students to the closest bus stop with a safe walk path, and GIS components were used for our new School Finder web application. I have been project manager for implementing new routing software and GPS in order to increase efficiency in routing and managing our fleet. I also played a major role in developing new boundaries for the proposed elementary student assignment plan for the 2013-14 school year. In general, I always look for opportunities to implement more GIS projects in order to increase efficiency and reduce costs.	8/4/2014 10:14 AM
76	GIS Instruction.	8/4/2014 10:09 AM
77	mosquito control/hazmat response	8/4/2014 10:06 AM
78	Data analysis, evaluation and health outcomes mapping	8/4/2014 9:48 AM
79	Desktop computer support.	8/4/2014 9:01 AM
80	Supporting GIS needs of Economic Development Dept, and other entities when needed, such as Dept. of Community Services and Revitalization, and Metro Council. This involves the creation of static maps, publishing layers, creating web services, and the use of ArcGIS Online to use ESRI web map applications for websites.	8/4/2014 8:55 AM
81	Speed Hump Coordinator for Public Works Traffic Engineering	8/4/2014 8:52 AM

82	Assistant Director for Parks Department/Parks Civil Engineer-Duties include investigation of existing underground utilites, design of small Park projects, preliminary investigation of property encroachments	8/4/2014 8:50 AM
83	Health Program Analyst, GIS realted - Geocoding, Choropleth maps for program evaluation and grant application, Demographic analysis by region, area-specific age-adjusted death rate calculation.	8/4/2014 8:50 AM
84	I work in reference at the library and am responsible for Interlibrary Loan, Government Documents and Business (to name a few)	8/4/2014 8:49 AM
85	System Administrator for LMPD's records management system.	8/4/2014 8:48 AM
86	Map Creation, Data Creation, Analysis	8/4/2014 8:43 AM
87	Editing data and creating maps	8/4/2014 8:29 AM
88	My primary job is as a User Interface Analyst and I am in charge of the ADHoc system within the Research Dept.	8/4/2014 8:27 AM
89	I support the business and IT career and technical programs. GIS is an IT focused career and technical program.	8/4/2014 8:17 AM
90	Project management	8/4/2014 8:13 AM
91	Engineer	8/4/2014 7:57 AM
92	Developing interactive applications	8/4/2014 7:56 AM
93	Oversee natural areas of Metro Parks.	8/4/2014 7:48 AM
94	Engineering Design	8/4/2014 7:31 AM

Q3 How often do you use LOJIC for your work?

Answered: 94 Skipped: 0



Answer Choices	Responses	
All day, every day	**22.34%**	21
Several times each day	**23.40%**	22
Several times each week	**26.60%**	25
Several times each month	**17.02%**	16
A few times a year	**10.64%**	10
Total		**94**

Q4 What data/information does LOJIC provide that is critical to your work?

Answered: 94 Skipped: 0

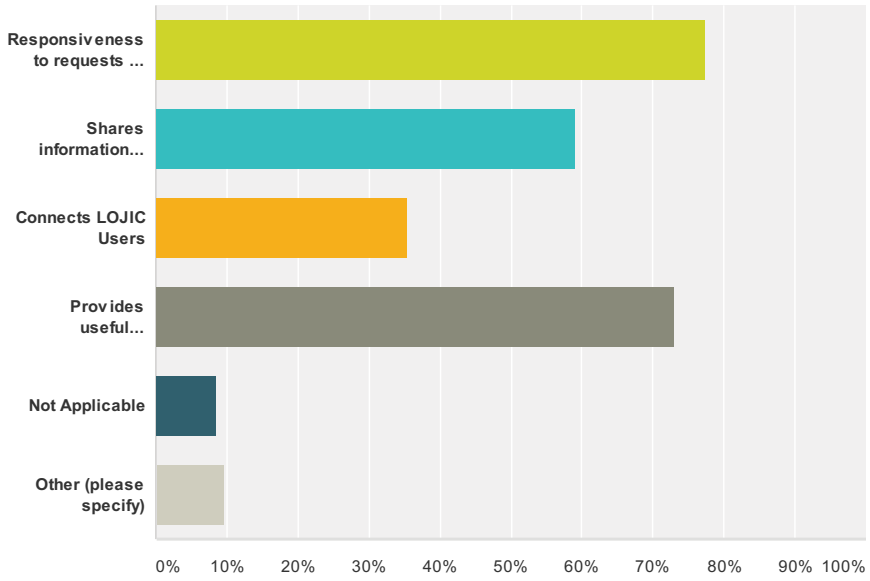
#	Responses	Date
1	PVA, Zoning, Streets and Address data	8/15/2014 10:52 AM
2	Every layer in the zoning layer is critical to my work	8/15/2014 10:41 AM
3	Software Spatial data (layers) Training & technical support Web apps & services Application development	8/15/2014 9:02 AM
4	We use street centerline and address information the most. Imagery is probably the most critical though.	8/15/2014 9:01 AM
5	Street address mapping, hydrant locations, building foot prints utility locations	8/15/2014 8:41 AM
6	Base mapping (plan/topo), street centerlines. site addresses and parcels are all critical information for managing the water infrastructure and customers.	8/15/2014 8:30 AM
7	geolocation; map	8/15/2014 8:18 AM
8	LAND TOPOLOGY, PTD LAYER,	8/15/2014 8:16 AM
9	Metro council boundaries and address locations.	8/14/2014 4:10 PM
10	address, parcel, road, fire district data	8/14/2014 7:46 AM
11	All of the Bullitt County layer files; support from staff; training that LOJIC has	8/13/2014 10:38 AM
12	Public infrastructure, social demographics, Census data, economic data, physical geo-characteristics	8/13/2014 8:13 AM
13	Lot sizes, proximity to various other locations/ameniteis/hazards and Ownership information.	8/12/2014 3:36 PM
14	Precincts and correct addresses for voters	8/12/2014 12:42 PM
15	Aerial, streets, PVA, utility, neighborhoods/municipality	8/12/2014 11:04 AM
16	all the data	8/12/2014 9:45 AM
17	It doesn't	8/12/2014 8:51 AM
18	census data, boundary data	8/12/2014 8:47 AM
19	Aerial Photography - Flood Data	8/12/2014 8:42 AM
20	aerial photo	8/12/2014 8:41 AM
21	zoning and plan certain info, development application layer in HARP	8/12/2014 8:34 AM
22	Streetcenter Lines, PVA Info, Subdivision Plats	8/11/2014 11:02 AM
23	Contours, terrain, most current hi-res aerial imagery, various vector files	8/11/2014 10:06 AM
24	Maps, contours, drainage structures	8/11/2014 8:31 AM
25	spatial data	8/11/2014 8:28 AM
26	Streets: lines, names, curbs/width, other characteristics, Building footprints, sidewalks, parcel info, aerial imagery, rails, parks, hydrology, form districts, zoning districts, census/demographics	8/11/2014 8:17 AM
27	aerial photography property boundries.	8/11/2014 6:33 AM
28	sewer, addresses, streets	8/10/2014 10:11 PM
29	Community data sets	8/8/2014 9:50 PM
30	asset management info, aerial imagery, street mapping	8/8/2014 4:37 PM
31	the entire database. I've most of it at some point.	8/8/2014 4:31 PM
32	Pretty much all of it. Streets and SWMS maps. Address points.	8/8/2014 3:56 PM
33	Use mapping data for Jefferson and surrounding counties.	8/8/2014 3:25 PM
34	addressing, streetcenterlines, zoning, subdivisions	8/8/2014 3:21 PM
35	Imagery, siteadd, street center line, ptd layers, drainage and sanitary layers	8/8/2014 3:19 PM
36	Parcel Lines; Zoning Boundary; Form District Boundary; Aerial Photo; Plan Certain Boundaries; Addresses; Many others	8/8/2014 3:04 PM
37	maps	8/8/2014 2:34 PM
38	Mapping, watershed & sewershed analysis.	8/8/2014 2:00 PM
39	zoning information, land use and data points on maps	8/7/2014 7:49 AM
40	Lojic Support	8/7/2014 7:36 AM
41	Zoning, parcels, pva,	8/6/2014 4:16 PM
42	planimetric data	8/6/2014 10:12 AM
43	street centerlines, aerial photography, division boundaries, neighborhoods, police beats, geocoding feature	8/6/2014 8:01 AM
44	Street Centerlines, Multi-County Base data, real estate master file, Aerial photography	8/5/2014 2:52 PM

45	Measuring Tools, street centerlines, LRSN search, air photos	8/5/2014 12:23 PM
46	Streets, addresses, aerial imagery.	8/5/2014 12:23 PM
47	Spatial, PVA, Flood Plains, Council Districts, Urban Areas, Major Roads, Streets, Addresses, JeffCo Boundaries, Shapefiles, it really varies by request, etc.	8/5/2014 12:12 PM
48	Sewer information, flood data, Imagery, Parcel Data Tool, all wastewater assets, SSO/CSO trackign and drainage. If you publish, my staff likely uses most of it.	8/5/2014 11:24 AM
49	Location of utiliiites and topography.	8/5/2014 10:24 AM
50	Current map data.	8/5/2014 8:22 AM
51	MSD Assets and location information. Analysis tools also help.	8/5/2014 8:18 AM
52	Floodplain, storm and sewer pipes, count ours,etc	8/4/2014 7:34 PM
53	I'm more support of the system and less about using the data for my job.however I do check the connectivity and updates are functioing ok.	8/4/2014 7:26 PM
54	Tax Rolls, Parcel Data, and Interactive Maps	8/4/2014 4:56 PM
55	point layers, line layers,and poly layers. storing info for future use.	8/4/2014 4:09 PM
56	PVA REMF, ability to map service provision	8/4/2014 4:05 PM
57	PTD, PVA, address point, imagery and street center line information is critical to day to day operations.	8/4/2014 4:04 PM
58	Road centerlines & property info & other utilities	8/4/2014 3:57 PM
59	Base / reference information, parcel data, street information, sewer data	8/4/2014 3:13 PM
60	The classic map viewer	8/4/2014 3:13 PM
61	Parcel level data and base map data (streets, counties, etc.). Schools.	8/4/2014 3:09 PM
62	Data	8/4/2014 3:08 PM
63	Data extraction, LWC Valve locations, Lead service count.	8/4/2014 3:01 PM
64	Site addresses, street centerlines, transportation data, just to name a few. Too many to list here.	8/4/2014 2:58 PM
65	Property line information and general mapping	8/4/2014 2:50 PM
66	property information/maps	8/4/2014 12:44 PM
67	Streets, address,	8/4/2014 12:22 PM
68	Jefferson county data	8/4/2014 12:00 PM
69	Streets, addresses, network analyst, geocoding, census data, al a whole bunch of a lot of stuff.	8/4/2014 11:32 AM
70	GIS layers, ArcGIS software	8/4/2014 11:12 AM
71	Sewers, Address/Transportation, Aerial Imagery, Drainage & Hydrography, Monitoring, Property Data, PTD, Reference Grids, etc.	8/4/2014 10:45 AM
72	Addresses, residential vs. other land use status, precinct and legislative districts locations, location of landmarks, schools, and other useful buildings that could serve as polling places	8/4/2014 10:40 AM
73	Aerial photography, site addresses, street centerlines, railroads, Census population data, land use, Council districts, building footprints, pavement footprints, and other PTD	8/4/2014 10:23 AM
74	Provide filing information for work, & geographical information critical to the zoning process	8/4/2014 10:18 AM
75	LOJIC Street Map (used as base map for Bus Finder web application) Street Centerlines/Street Network Site Addresses Address Locators Census Boundaries Aerial Imagery Planimetric Data Parcel Boundaries PVA Data Jeflib Metrolib	8/4/2014 10:14 AM
76	Address, Property info, Base Map (PTD) info, Imagery	8/4/2014 10:09 AM
77	streets, aerial maps, topo, PVA, subdivisions, mosquito treatment areas, municipality boundaries, council districts, catchbasins, streams, drainage lines, possibly others that i use without them coming to mind	8/4/2014 10:06 AM
78	Jefferson county shape files	8/4/2014 9:48 AM
79	For my personal work, none of it. For the department I support, all of it.	8/4/2014 9:01 AM
80	All published data, especial Parcel data, access to PVA data, streets, municipalities, landuse, zoning, etc., as well as geocoding services, technical help and support, hosting webservices that can be brought into ArcGIS Online. Also, allows me to create and publish data. LOJIC is absolutely critical to my work in every way, every day.	8/4/2014 8:55 AM
81	ArcGIS	8/4/2014 8:52 AM
82	Base maps, parcel property ownership, aerial photo maps, CAD data	8/4/2014 8:50 AM
83	Base shapefiles,	8/4/2014 8:50 AM
84	Demographics	8/4/2014 8:49 AM
85	N/A	8/4/2014 8:48 AM
86	Sewer, Drainage, Streets, Aerial Photo, PTD	8/4/2014 8:43 AM
87	Sewer data mostly, but also data for addresses, roads, parcels	8/4/2014 8:29 AM
88	When using GIS I am usually using spacial joins in order to show how certain students (or people) relate to the district. We also use the zip code shapefiles, board/senate/etc member shapefiles. Here lately we have been using more and more the Neighborhood shapefiles as well as the street center-lines.	8/4/2014 8:27 AM
89	LOJIC provides local data for high school GIS classes.	8/4/2014 8:17 AM

90	Property boundaries and owners, roadway ownership, measuring lengths and areas, contour information, street classification, city boundaries, preservation areas, and subdivision boundaries.	8/4/2014 8:13 AM
91	FPS, utilities, addresses, parcels, streets	8/4/2014 7:57 AM
92	Aerial tilesets, geographic bounds, misc shp files	8/4/2014 7:56 AM
93	Aerial imagery, PVA, roads, contours, water features	8/4/2014 7:48 AM
94	maps	8/4/2014 7:31 AM

Q5 Check the items that LOJIC Staff does well.

Answered: 93 Skipped: 1

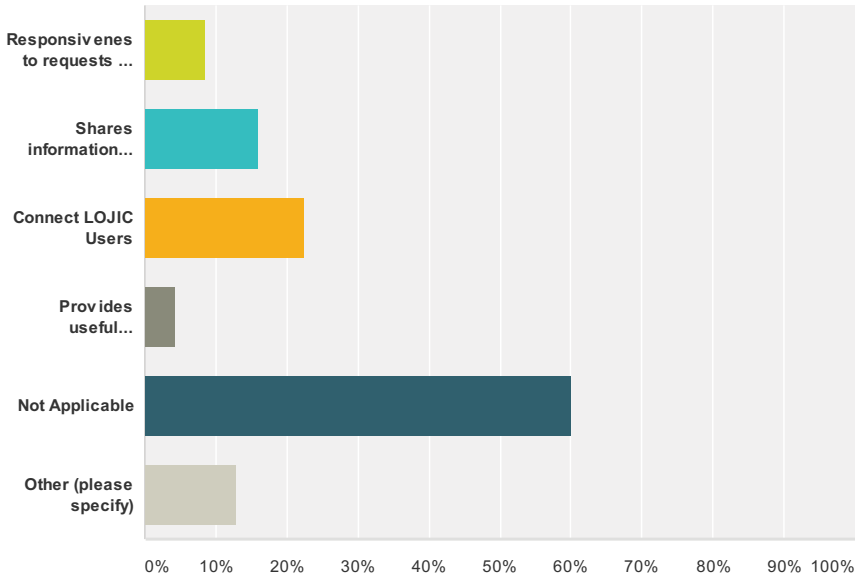


Answer Choices	Responses	
Responsiveness to requests for support	**77.42%**	72
Shares information about what LOJIC is doing	**59.14%**	55
Connects LOJIC Users	**35.48%**	33
Provides useful assistance	**73.12%**	68
Not Applicable	**8.60%**	8
Other (please specify)	**9.68%**	9
Total Respondents: 93		

#	Other (please specify)	Date
1	provides data	8/15/2014 10:55 AM
2	I don't interact with LOJIC staff very often. I should communicate with LOJIC staff more as I am sure there is plenty of opportunity to work together to help improve the community.	8/15/2014 9:07 AM
3	LOJIC staff have always been willing to meet and discuss topics relevant to GIS maintenance and development	8/15/2014 8:34 AM
4	Assits in a number of organizational issues, including improving data structure, workflow issues, and assists in all areas of spatial data improvement.	8/13/2014 8:15 AM
5	Everything	8/11/2014 8:25 AM
6	Jane Poole has been excellent to to work with and has always been able to help me with any issues that I might have	8/8/2014 3:27 PM
7	Keeps the system going	8/4/2014 10:26 AM
8	Expediant and timely publishing and updating layers when possible, and supporting the creation of web services and geocoding services.	8/4/2014 8:58 AM
9	Supports the K-12 GIS community.	8/4/2014 8:18 AM

Q6 Check the items that LOJIC Staff need to improve.

Answered: 93 Skipped: 1

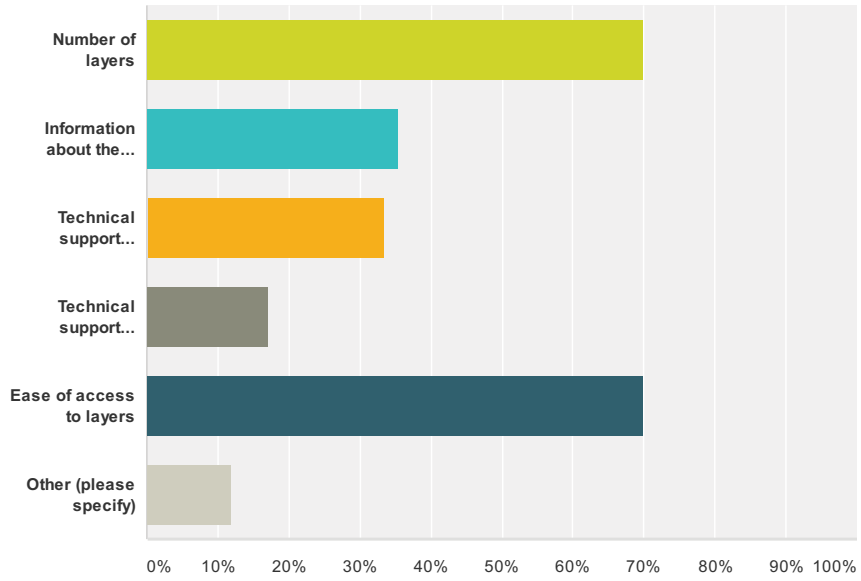


Answer Choices	Responses	
Responsivenes to requests for support	**8.60%**	8
Shares information about what LOJIC is doing	**16.13%**	15
Connect LOJIC Users	**22.58%**	21
Provides useful assistance	**4.30%**	4
Not Applicable	**60.22%**	56
Other (please specify)	**12.90%**	12
Total Respondents: 93		

#	Other (please specify)	Date
1	improve usefulness of PVA data	8/15/2014 10:55 AM
2	I have nothing but good things to say about LOJIC staff and what they do for the community and GIS in the region, but sadly like I stated in the above before I have limited personal interaction.	8/15/2014 9:07 AM
3	LOJIC often states it wants to be a provider of development and general GIS services, but often when approached about specific needs it take a long time to get results. I'm sure this is due in part to staffing levels.	8/15/2014 8:34 AM
4	Its slow to work in maps since the update.	8/10/2014 10:14 PM
5	Coordination between users of who is responsible for what data.	8/5/2014 12:25 PM
6	Some user feedback method for the Classic Map Viewer. Having fewer layers turned on on startup. Being able to change the layer look and feel and hierarchy. Also, having access to pictometry of some sort - either through PVA or a Google service.	8/5/2014 11:36 AM
7	There are possibilities to expand the knowledge of users out side of LOJIC when LOJIC takes on software upgrades or improvements. If a major upgrade is scheduled, others could benefit by observing the upgrade while it happens. Or, for example, the GIS software is being extended by incorporating metadata, have users sit in on the process.	8/4/2014 4:09 PM
8	Need a better platform for sharing maps and data in addition to J:/common which is regularly cleaned out	8/4/2014 4:06 PM
9	I'm somewhat familiar with the LOJIC applications and efforts but only to a point. It may be good from a resource sharing perspective to improves the lines of communications from all the business partners. I am sure that the same statements can be made for all the partners. We are not the best at sharing what we are doing or where we are headed.	8/4/2014 3:14 PM
10	Can't think of anything, these guys are on top of it,	8/4/2014 3:04 PM
11	Implementation of GIS server services	8/4/2014 10:26 AM
12	Citrix needs improvement. It has become very slow.	8/4/2014 8:45 AM

Q7 Check the items about LOJIC data that work well for you.

Answered: 93 Skipped: 1

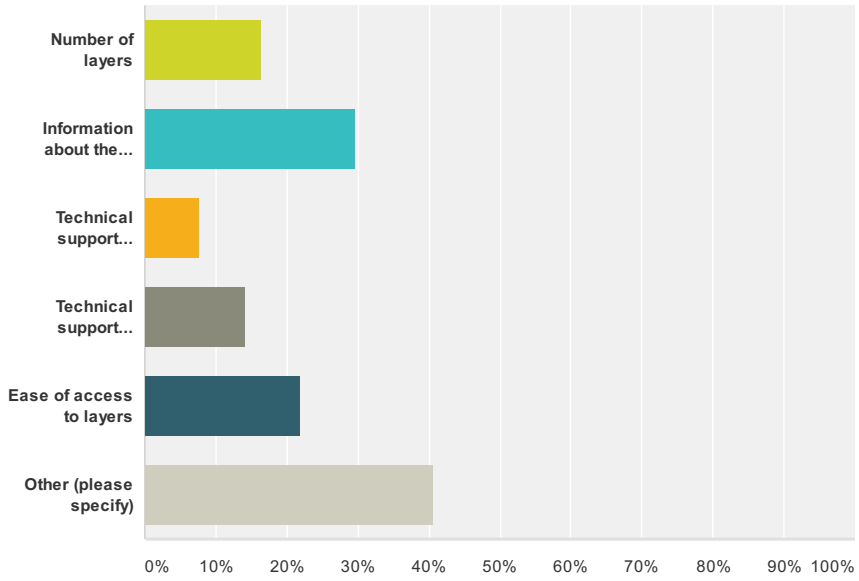


Answer Choices	Responses	
Number of layers	**69.89%**	65
Information about the layers (metadata)	**35.48%**	33
Technical support pertaining to editing	**33.33%**	31
Technical support pertaining to metadata creation	**17.20%**	16
Ease of access to layers	**69.89%**	65
Other (please specify)	**11.83%**	11
Total Respondents: 93		

#	Other (please specify)	Date
1	LOJICs eagerness to help the community and state by sharing GIS knowledge and data.	8/15/2014 9:07 AM
2	database maintenance/assistance	8/15/2014 8:19 AM
3	Not applicable	8/11/2014 6:34 AM
4	All of the data that you have is excellent. Within the sewer modeling and surface water modeling, we have corrected many attributes (inverts, pipe diamters, manhole locations, catch basin locations.) We have yet to figure out a viable way to get this data back into a LOJIC layer. The best way may be to simply publish a sewer model layer and other data that we currently have rather then try to push the data back into Hansen.	8/5/2014 11:36 AM
5	i typically don't use the data but believe there is a wealth of information that to develop and share.	8/4/2014 8:36 PM
6	I haven't been back to LWC long enough to grade the rest. But it's all coming back to me.	8/4/2014 3:01 PM
7	troubleshooting, resolving conflicts,	8/4/2014 11:34 AM
8	The system works most of the time. However it would seem to me a system this complex would some sort of monitoring functions to tell you what it was doing. I can't count the nuimber of times, I have gotten an a wait state with no idea whether I have made an error, the machine is computing my request, or the entire operation is lost. a program monitoring window has to exist somewhere, why can't we see it?	8/4/2014 10:27 AM
9	I don't really use it. I support those who do.	8/4/2014 9:02 AM
10	There are large numbers of layers, but it can be hard to locate something specific. Also hard to know exactly what is relevant. Maybe produce sometype of cataloge divided by industry type.	8/4/2014 8:52 AM
11	NA	8/4/2014 8:18 AM

Q8 Check the items about LOJIC data that need improvement.

Answered: 91 Skipped: 3



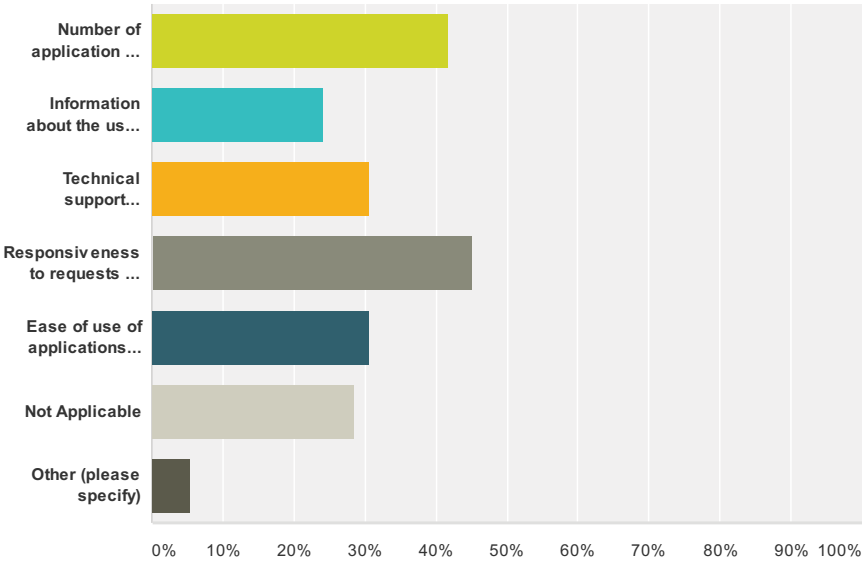
Answer Choices	Responses	
Number of layers	**16.48%**	15
Information about the layers (metadata)	**29.67%**	27
Technical support pertaining to editing	**7.69%**	7
Technical support pertaining to metadata creation	**14.29%**	13
Ease of access to layers	**21.98%**	20
Other (please specify)	**40.66%**	37
Total Respondents: 91		

#	Other (please specify)	Date
1	connecting to SDE is a pain in the a$$	8/15/2014 10:15 AM
2	I would like to see a sidewalk layer or and updated miscellaneous transportation layer where updated sidewalks can be queried out. Also, and accurate bike lanes layer would be helpful.	8/15/2014 9:11 AM
3	More current and accurate regional data if possible.	8/15/2014 8:35 AM
4	To the best of my knowledge: none	8/15/2014 8:21 AM
5	Not Applicable	8/14/2014 4:13 PM
6	Search engine cababilites.	8/13/2014 8:16 AM
7	na	8/12/2014 12:43 PM
8	Why is when I add a layer, I will save map and come back later (via login--and this is days later) and the layer is not working (red exclamation !)	8/12/2014 11:07 AM
9	NA	8/12/2014 8:50 AM
10	So far. So good.	8/12/2014 8:44 AM
11	the building footprint layer isn't always up to date; I would like more data from Clark and Floyd counties	8/11/2014 8:39 AM
12	n/a	8/11/2014 8:33 AM
13	None	8/8/2014 3:28 PM
14	None	8/8/2014 3:24 PM
15	N/A	8/8/2014 3:07 PM
16	N/A	8/8/2014 2:05 PM
17	when public file are created naming of file needs to be clearer so user can identify what the layer is.	8/7/2014 7:56 AM
18	redundant layers, out of date (seemingly) layers, name changes and restructuring seems ongoing instead of rolling out periodic changes and informing users (or at least remote users)	8/6/2014 10:14 AM

19	A mobile application would be extremely useful. Also, we have sewer videos for over 70% of our system. Having a way to link the sewer lines in ArcGIS directly to the videos would be very valuable. With the recent upgrade to eB, I believe we can load all videos into eB and create a link from the GIS environment to the video. We've invested about $10 million on obtaining these. A way to preserve them would be great.	8/5/2014 1:47 PM
20	None	8/5/2014 12:26 PM
21	Some layers barely have information. Each layer should atleast point to a contact.	8/5/2014 8:21 AM
22	From an LWC perspective, more integration with SCADA.	8/4/2014 9:24 PM
23	Keeping online metadata up to date, which is probably an impossible task. I do find a fair share of outdated attribute descriptions.	8/4/2014 3:15 PM
24	More hosted ArcServer layers availble to me web applications would be great.	8/4/2014 3:10 PM
25	N/A	8/4/2014 12:25 PM
26	NA	8/4/2014 11:35 AM
27	None	8/4/2014 11:33 AM
28	The method of connecting to SDE could be improved.	8/4/2014 10:32 AM
29	NA	8/4/2014 10:16 AM
30	na	8/4/2014 10:10 AM
31	Same as above.	8/4/2014 9:03 AM
32	Work to have latest versions available from ESRI, and encourage and support the use of cloud GIS, such as ArcGIS Online.	8/4/2014 9:00 AM
33	I have no issues	8/4/2014 8:54 AM
34	N/A	8/4/2014 8:46 AM
35	NA	8/4/2014 8:19 AM
36	none	8/4/2014 8:01 AM
37	N?A	8/4/2014 7:58 AM

Q9 Check the items about LOJIC custom applications and tools that work well for you.

Answered: 91 Skipped: 3

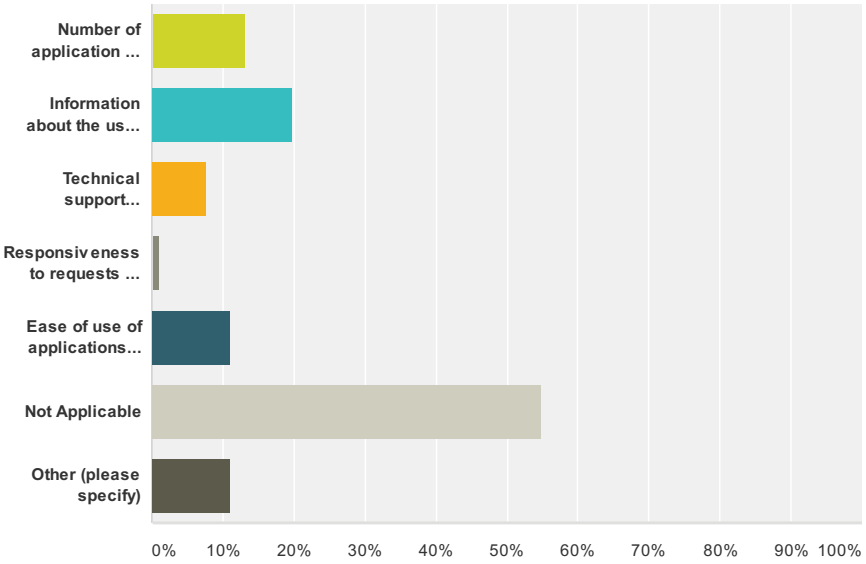


Answer Choices	Responses	
Number of application and tools	**41.76%**	38
Information about the use of application and tools	**24.18%**	22
Technical support pertaining to applications and tools	**30.77%**	28
Responsiveness to requests for support	**45.05%**	41
Ease of use of applications and tools	**30.77%**	28
Not Applicable	**28.57%**	26
Other (please specify)	**5.49%**	5
Total Respondents: 91		

#	Other (please specify)	Date
1	I do not use LOJIC's custom applications.	8/15/2014 9:11 AM
2	I use the address locator daily	8/11/2014 8:39 AM
3	The amount of data available is great.	8/5/2014 1:47 PM
4	I used to work with the Products app on a regular basis. The application did all we needed and was supported well.	8/4/2014 4:12 PM
5	interactions with other programs (HANSEN) Need the ability to transfer mapping information to HANSEN records, and have been told it is not possible. (been waiting on this somewhere between 3 and 5 YEARS) Of course I work with Hansen records that were input from Citrix I just can't modify the records, except by manually	8/4/2014 10:37 AM

Q10 Check the items about LOJIC custom applications and tools that need improvement.

Answered: 91 Skipped: 3

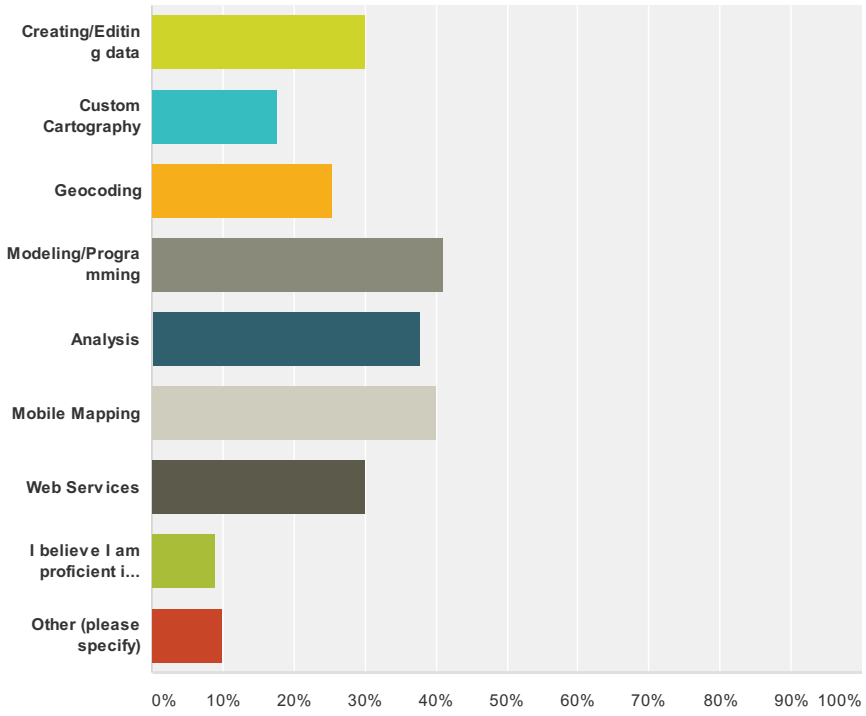


Answer Choices	Responses	
Number of application and tools	**13.19%**	12
Information about the use of application and tools	**19.78%**	18
Technical support pertaining to applications and tools	**7.69%**	7
Responsiveness to requests for support	**1.10%**	1
Ease of use of applications and tools	**10.99%**	10
Not Applicable	**54.95%**	50
Other (please specify)	**10.99%**	10
Total Respondents: 91		

#	Other (please specify)	Date
1	I do not use LOJIC's custom applications but perhaps should look into what is offered.	8/15/2014 9:11 AM
2	I have issues with the development activity tool	8/11/2014 8:39 AM
3	none	8/8/2014 3:24 PM
4	Need more tools for LOJIC web based maps.	8/8/2014 3:07 PM
5	If the complicated drive system could be integrated, it would save a lot of time.	8/5/2014 1:47 PM
6	Can think of nothing	8/4/2014 11:35 AM
7	publishing layers should be made easier.	8/4/2014 10:37 AM
8	The coordinate conversion tool could cover more coordinate systems, such as UTM (Zone 16). Maybe the LOJIC Tools in ArcMap could become a custom toolbox (and thus searchable) instead of a custom toolbar.	8/4/2014 10:32 AM
9	N/A	8/4/2014 8:46 AM
10	none	8/4/2014 8:01 AM

Q11 Check the LOJIC/GIS Topics you need to learn more about.

Answered: 90 Skipped: 4

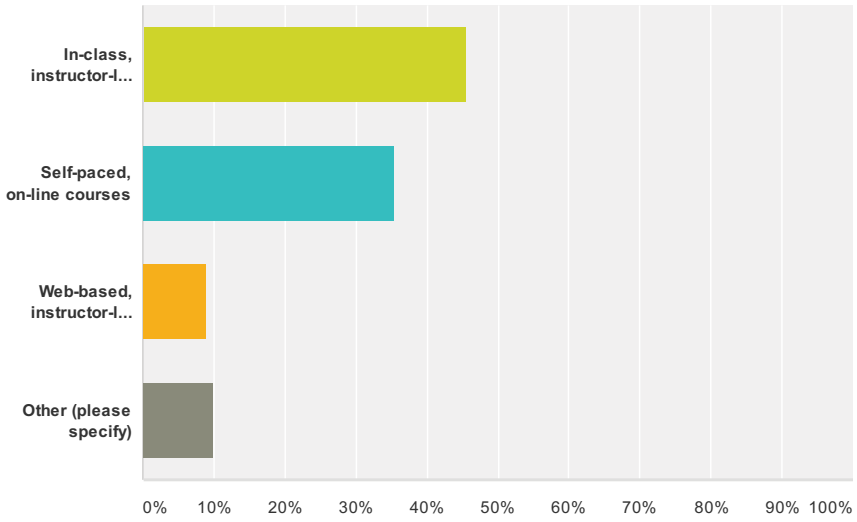


Answer Choices	Responses	
Creating/Editing data	**30.00%**	27
Custom Cartography	**17.78%**	16
Geocoding	**25.56%**	23
Modeling/Programming	**41.11%**	37
Analysis	**37.78%**	34
Mobile Mapping	**40.00%**	36
Web Services	**30.00%**	27
I believe I am proficient in all LOJIC/GIS topics.	**8.89%**	8
Other (please specify)	**10.00%**	9
Total Respondents: 90		

#	Other (please specify)	Date
1	To me this should be 2 separate questions. I'm familar to all of these GIS topics but maybe not as they pertain to LOJIC	8/11/2014 10:19 AM
2	I would like to learn more about all of these topics, I can't say however that I 'need' to for the tasks I perform	8/11/2014 8:41 AM
3	I'm not familiar with all available applications.	8/8/2014 2:20 PM
4	while proficient; always looking to learn new/more	8/6/2014 10:15 AM
5	3 Dimension Cases with ArcScene	8/5/2014 1:51 PM
6	System administration, especially with newer ESRI software releases.	8/4/2014 9:25 PM
7	publishing layers	8/4/2014 10:46 AM
8	Time series/animation	8/4/2014 10:36 AM
9	All of them	8/4/2014 9:03 AM

Q12 What is your preferred training method?

Answered: 90 Skipped: 4

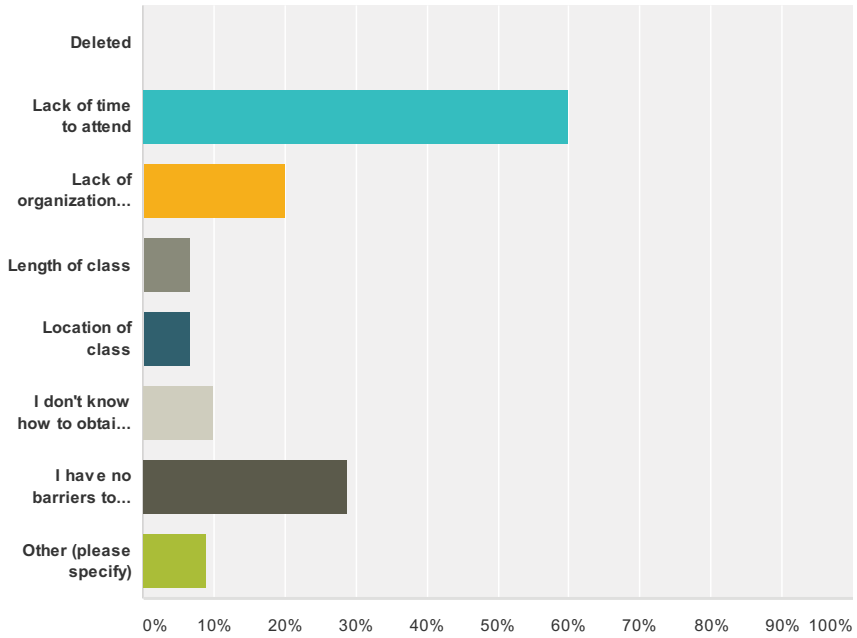


Answer Choices	Responses	
In-class, instructor-led courses	**45.56%**	41
Self-paced, on-line courses	**35.56%**	32
Web-based, instructor-led courses	**8.89%**	8
Other (please specify)	**10.00%**	9
Total		**90**

#	Other (please specify)	Date
1	All three work for me.	8/12/2014 11:08 AM
2	My preferred choice is instructor led but with working in the federal government funding is very limited to attend such training.	8/11/2014 10:19 AM
3	Simple written instructions.	8/8/2014 3:08 PM
4	Self-paced, off-line with instructional handouts.	8/8/2014 2:20 PM
5	i would like to try the self-paced, on-line courses and the web-based, instructor-led-courses to see if i prefer either of these over in-class, instructor-led courses.	8/7/2014 8:01 AM
6	whatever kind i can actually get is my preferred method.	8/6/2014 10:15 AM
7	online examples and tutorials	8/4/2014 3:11 PM
8	Depends on subject matter	8/4/2014 3:11 PM
9	Personal Experimentation. I feel if the documentation is searchable, and i can get reliable e-mail from the instuctor, telling me what kind of map to make should be enough. I learn by making mistakes at my own pace. It may not be fast, but it makes me reliable.	8/4/2014 10:46 AM

Q13 What are barriers to obtaining LOJIC/GIS Training?

Answered: 90 Skipped: 4

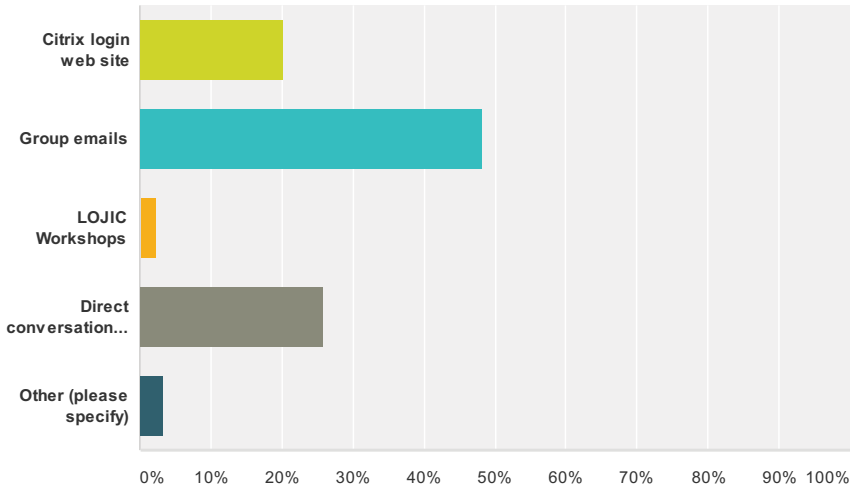


Answer Choices	Responses	
Deleted	**0.00%**	0
Lack of time to attend	**60.00%**	54
Lack of organizational support	**20.00%**	18
Length of class	**6.67%**	6
Location of class	**6.67%**	6
I don't know how to obtain training.	**10.00%**	9
I have no barriers to training.	**28.89%**	26
Other (please specify)	**8.89%**	8
Total Respondents: 90		

#	Other (please specify)	Date
1	funding	8/15/2014 10:56 AM
2	Looking to retire soon.	8/12/2014 8:45 AM
3	Funding	8/11/2014 10:19 AM
4	I dislike most training classes, in general.	8/8/2014 2:20 PM
5	sometimes when classes are offered unable to attend due to something going on at the office	8/7/2014 8:01 AM
6	The introductory courses are great. Some more advanced courses showing data management, display and advance mapping like ArcScene and CityEngine would be valuable	8/5/2014 1:51 PM
7	scheduling; often falls in Apr/May or Oct/Nov when we can not get away from office	8/4/2014 11:37 AM
8	I have been trained in operations i never need, other than upgrade training (what to do when a new version comes out) I prefer to be able to 'train by assignment' that i I am told what kinds of maps I will be making and receive training in those areas '	8/4/2014 10:46 AM

Q14 What is the most common way you get information from LOJIC now?

Answered: 89 Skipped: 5

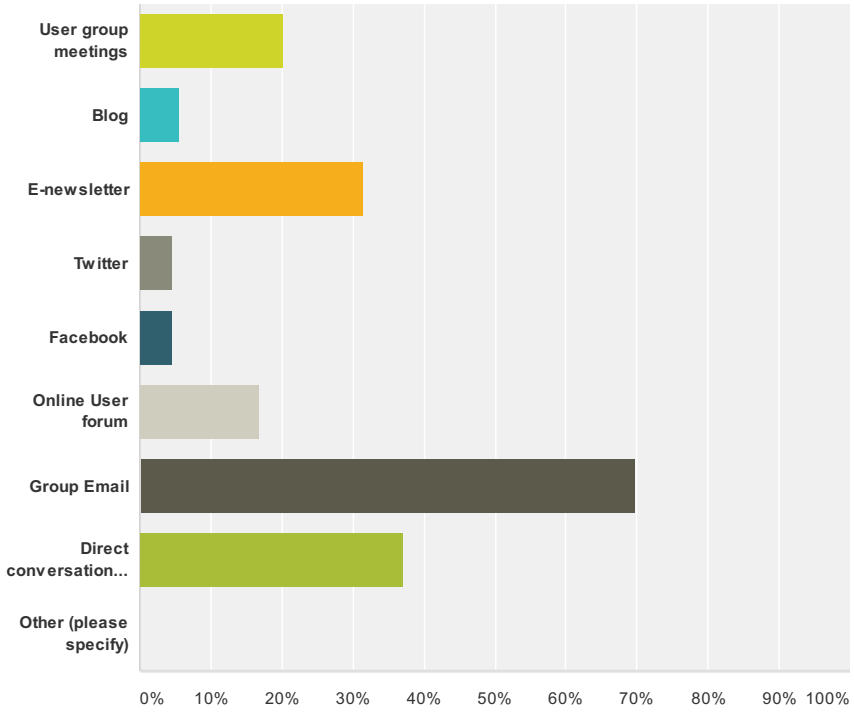


Answer Choices	Responses	
Citrix login web site	**20.22%**	18
Group emails	**48.31%**	43
LOJIC Workshops	**2.25%**	2
Direct conversations with LOJIC staff	**25.84%**	23
Other (please specify)	**3.37%**	3
Total		**89**

#	Other (please specify)	Date
1	ftp site	8/12/2014 8:52 AM
2	seeing the data change live	8/6/2014 10:17 AM
3	Haven't received any yet. Only been here a month.	8/4/2014 3:11 PM

Q15 What would be your preferred methods of communications from or about LOJIC?

Answered: 89 Skipped: 5



Answer Choices	Responses	
User group meetings	**20.22%**	18
Blog	**5.62%**	5
E-newsletter	**31.46%**	28
Twitter	**4.49%**	4
Facebook	**4.49%**	4
Online User forum	**16.85%**	15
Group Email	**69.66%**	62
Direct conversations with LOJIC staff	**37.08%**	33
Other (please specify)	**0.00%**	0
Total Respondents: 89		

#	Other (please specify)	Date
	There are no responses.	

Q16 What other suggestions do you have for expanding the use of LOJIC and/or improving services?

Answered: 25 Skipped: 69

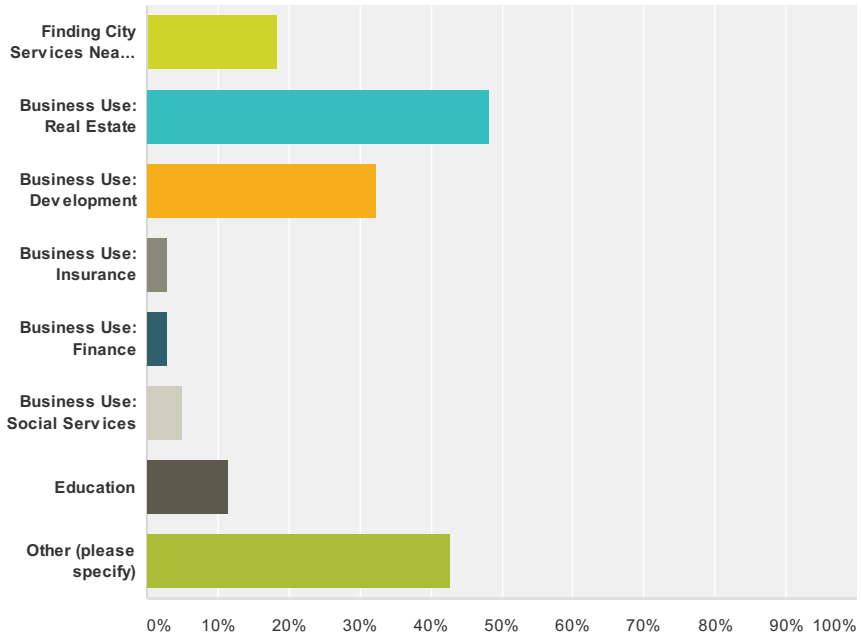
#	Responses	Date
1	improve usability of pva data. more web services	8/15/2014 10:57 AM
2	Citrix network needs to be more stable/responsive - LOJIC needs it's own network admin again. Need to take advantage of web mapping capabilities & put more control over them in the hands of individual agency staff.	8/15/2014 10:25 AM
3	Really, I need to interact more with LOJIC staff to take better advantage of the rich resources you provide and contribute something back in return.	8/15/2014 9:47 AM
4	Become a regional hub for GIS data that would not only provide the platform for surrounding municipalities to implement/use GIS, but would also make the information from those regional entities available to LOJIC partners with regional interests (LWC).	8/15/2014 8:40 AM
5	LOJIC is great, I just wish the library was more invested in it. Keep up the great work!	8/14/2014 4:16 PM
6	You guys do an excellent job in all areas. So often, we work in silos, it might be helpful to create a forum to foster communication between organizaitons to share data, workflows, solutions, ect...	8/13/2014 8:19 AM
7	I would prefer to have only one password that would in one step connect me with citrix and the LOJIC database	8/11/2014 8:45 AM
8	More tools for web based maps. I'm happy with my Citrix GIS login.	8/8/2014 3:09 PM
9	I think the information is great!	8/8/2014 2:21 PM
10	its hard or not worth the hassle one has to go through to get programs changed or updated because of changes in office procedures.	8/7/2014 8:03 AM
11	I think this is a great service/tool/software, but I definitely need more training/tools/ideas.	8/5/2014 12:20 PM
12	Like mentioned previously, I don't use the data as much as administer the application, updates, and storage of the data. With all of the One Water collaboration, and this may be underway already, are there combined development strategies? LWC has been pushing mobile devices and the LWC team developed an exceptional mobile tool. what about porting that to an MSD version? LOJIC has external customer facing sites. What about porting those to LWC customers with water specific information? The LwC and MSD IT teams are working together to integrate networks. Whatabout taking the opportunity to build a shared server/database/network infrastructure to take advantage of DR and ESRI license reduction (possibly). Instead of LWC copying data weekly and MSD doing the same, we would have a GIS cluster spread across our locations in an active-active configuration. Each could utilize staff from both organizations for improved system administration, development, etc. There is so much GIS data available that could be tied to other applications, like SCADA and the LWC Oracle MWM solution. MWM uses Navteq data. It would be great to get our data in a format for MWM and stop paying Navteq data fees.We should also look to share mobile solutions between organizations.	8/4/2014 9:41 PM
13	All of LOJIC's users appreciate the data, tools and services that are served and supported. I think it would be beneficial to local GIS community if LOJIC would be the local hub for new or emerging GIS technology. The GIS profession is ever evolving with regards to software, tools and applications and that makes it very difficult to stay current with the changes. I think LOJIC could fill the role of presenting the newest technology to the user community. I believe this would spawn growth in the local and regional GIS community.	8/4/2014 4:35 PM
14	would be great to know with relative ease how current the layers are. can be difficult to find layers (e.g., there are several road layer files in different folders). Jane Poole has been very accessible and helpful. Feel like Metro has many types of online mapping tools - would be great to know the relative merits of one or the other.	8/4/2014 3:17 PM
15	I'd like to see both internal and external blogs .. external discussing public projects and what is happening with LOJIC as a means to promote and validate the effort. Internal as a means to share all the previous and also internally accessible applications. Also, from a technology standpoint I'd like to see a mutual blog, using the expertise of the different business partners to share knowledge, discuss topics, and create a resource for users on development, trends, plans, how to improve their data, trials and tribulations, code snippets, etc. Expand LOJIC and the partnerships past 'data' and into open support, knowledge sharing, trends, and a must have learning resource. I believe most of my comments are more than just LOJIC .. they are also business partners as well. I believe that getting everyone involved will only benefit ..everyone!	8/4/2014 3:16 PM
16	A street network dataset that would allow routing would be great. Elevation data web service.	8/4/2014 3:15 PM
17	accept PVAs 'bird's eye view' [forgot technical term] as an option for aerial layer.....	8/4/2014 11:16 AM
18	Add focused services for sets of users that don't need a full GIS, but only a utility, such as address lookup/geocoding, or Census data for a ZIP code, for example.	8/4/2014 10:40 AM
19	easier way to search the layers for what i need. I don't know if there is a way to search all of the metadata for key words in order to find the necessary layer, but that would be very helpful.	8/4/2014 10:12 AM
20	No suggestions. I don't use LOJIC often enough, but when I need help Jane is always there for me.	8/4/2014 8:53 AM
21	I have always enjoyed working with the LOGIC staff in the years I have been assigned to this. I do wish there were more training opportunities and I may just have to go back to some that I have already completed to get more help with what I would like to do. Other than that I have been pleased with everything LOGIC has done.	8/4/2014 8:30 AM
22	Jane Poole has done an excellent job supporting the K-12 GIS programs at JCPS. I appreciate her work and support from her supervisors for letting her spend time to help with the school system.	8/4/2014 8:21 AM
23	Improving print feature and adding additional layers (CDBG eligibility).	8/4/2014 8:15 AM
24	Tag metadata better. I can find dozens of instances of blank or boilerplate verbiage in some of the files. Create a better portal for being able to access/manage datasets (FTP not the most efficient thing).	8/4/2014 8:00 AM

25	Layers; more utility layers will be very helpful. Like Water, gas, electric layers given on the side just like the sewer	8/4/2014 7:36 AM

LOJIC Strategic Innovations Survey

Q1 For what purpose do you use GIS/Mapping Applications?

Answered: 201 Skipped: 0



Answer Choices	Responses	
Finding City Services Near Me	18.41%	37
Business Use: Real Estate	48.26%	97
Business Use: Development	32.34%	65
Business Use: Insurance	2.99%	6
Business Use: Finance	2.99%	6
Business Use: Social Services	4.98%	10
Education	11.44%	23
Other (please specify)	42.79%	86
Total Respondents: 201		

#	Other (please specify)	Date
1	Identifying property and land details of a large housing community things like landscaping bids and event planning.	8/22/2014 10:33 AM
2	Personal Use: finding info on nearby houses, neighborhoods; Personal Use: research	8/22/2014 9:42 AM
3	employment	8/21/2014 7:53 PM
4	Information gathering, particularly related to specific properties	8/21/2014 4:03 PM
5	Environmental	8/21/2014 1:49 PM
6	Business Use: Permitting (Floodplain)	8/21/2014 1:47 PM
7	Consulting, Environmental and commercial development	8/21/2014 1:23 PM
8	Professional - Maps for displays / reports for MSD projects. Determine property owner info in order to make contact with them when working in their areas. Personal - find locations for busineses, look up names of property owners.	8/21/2014 8:41 AM
9	duh	8/20/2014 10:30 PM
10	Topographic information for bike rides	8/20/2014 7:54 PM
11	business use: zoning	8/20/2014 1:14 PM
12	I am the treasurer for our HOA and the maps/ownership information helps me keep our records in order.	8/20/2014 10:33 AM
13	Government use: compliance reviews	8/20/2014 9:12 AM
14	site planning	8/19/2014 9:29 PM

15	Surveying. Great tool to use when estimating the cost, and difficulty, of a project prior to going in the field. Also source of benchmark datum.	8/19/2014 4:40 PM
16	Research	8/19/2014 12:16 PM
17	Personal use: Real Estate - checking distances to neighbors and heavily traveled roads, topographic maps, utilities, exact property locations, etc. while looking at houses/land for my primary residence	8/19/2014 12:15 PM
18	I loved the website when we could see more information about a location--residential and business property--included owner, previous owner, history of selling price, square footage, acreage, characteristics of the property such as whether it had a garage, basement and so forth, year it was built, city services, zoning info, geological info, and so much more. I would love to see all these features again.	8/19/2014 11:52 AM
19	Property Zoning, Form District, etc. info.	8/19/2014 10:08 AM
20	Business: Roofing	8/19/2014 9:20 AM
21	Metro council business	8/19/2014 8:22 AM
22	Business Use: Local law enforcement	8/19/2014 7:07 AM
23	Great tool to find addresses and property lines and new developments.	8/19/2014 6:22 AM
24	When working as a consultant to Metro and other governmental institutions, we utilize Lojic data for neighborhood plans, preliminary streetscape designs, etc...	8/18/2014 5:15 PM
25	To assist residents of District 10 with questions and concerns usually about where the right of ways are and other information they request.	8/18/2014 12:30 PM
26	Economic Development Planning	8/18/2014 10:15 AM
27	governmental use, real estate, development, research	8/18/2014 10:05 AM
28	Business Use: Architect	8/18/2014 8:57 AM
29	Land Conservation, recreational access	8/18/2014 8:33 AM
30	Property owner information for Homeowner's Association issues.	8/18/2014 7:43 AM
31	flood info.	8/17/2014 3:20 PM
32	Business-JCPS transportation	8/16/2014 9:08 PM
33	personal real estate.	8/16/2014 9:07 PM
34	Personal use-- real estate	8/16/2014 10:53 AM
35	Looking for building permit information	8/16/2014 8:10 AM
36	Looking to move to Louisville and looking at flood zones . I was born in Louisville and live in Orlando now so I am water aware.	8/16/2014 1:34 AM
37	as utility engineer use it to review ROW, addressing, ownership info, etc needed for permits, and design in Metro area.	8/15/2014 11:26 AM
38	routing buses for JCPS	8/15/2014 11:04 AM
39	Utility Construction conflict resolution	8/15/2014 7:33 AM
40	Finding out more information about what properties what companies own	8/15/2014 1:29 AM
41	Determine opportunities for purchase and/or development.	8/14/2014 5:57 PM
42	Determining who owns certain parcels of property, who their representatives are, etc.	8/14/2014 2:40 PM
43	To examine surrounding areas of real estate I might purchase, check on property evaluation, and to see if property is on or close to a snow route.	8/14/2014 2:33 PM
44	LOCATING ADDRESSES	8/14/2014 12:38 PM
45	Fema floodplain map amendment	8/14/2014 11:35 AM
46	mcpping	8/14/2014 9:57 AM
47	To identify if sites are in the City of Jeffersontown, to check Zoning & Form Districts.	8/14/2014 9:07 AM
48	I use Logic to find addresses for student assignment.	8/14/2014 8:39 AM
49	Use Metro 311 app for reporting issues I see on my pedals thru district	8/14/2014 7:15 AM
50	To know my surroundings	8/13/2014 10:32 PM
51	personal, for plats and such	8/13/2014 10:21 PM
52	Government	8/13/2014 9:43 PM
53	finding where addresses are; looking up info related to residential and commercial property development, and places where highways are being expanded; looking at what is behind properties; looking at topography and such things as flood risk, steep slopes, right-of-way, easements; looking at roads and highways; seeing how neighborhoods are layed out, numbers and sizes of buildings. Used to be able to see more of interest regarding developments but LOJIC has restricted information from ordinary citizens in recent years.	8/13/2014 9:33 PM
54	Being nosey about the value of other homes.	8/13/2014 7:29 PM
55	Community Good	8/13/2014 4:08 PM

56	I use the LOJIC viewer portal to find exact addresses and parcel #s, and information on specific distressed properties. I have to manually cross reference these parcels and multi parcel properties with the PVA and its paid services separate portal. By using these two resources I can in a cumbersome and somewhat time/cost heavy process determine current ownership. assessed value, copy of deeds (current and past), property tax burden (A/V and current taxes owed), These are properties that I like to monitor to know the above information to determine where I hope eventually invest to locate my home and business. I also need this information to help inform folks similarly interested in urban core redevelopment. This is all outside my "work" efforts. I use the resources for similar efforts to confirm properties discussed for liability management and related for work purposes during transaction screening, etc. I believe the PVA and LOJIC's future could be integrated with Sheriff's Office and all the associated public data easily provided for free, which would help provide information to the public and incubate investment. Additionally - data sets could witness value added efforts by LOJIC in many to provide revenue streams.	8/13/2014 3:28 PM
57	Looking for specific info about land to suggest as a location for a business I frequent.	8/13/2014 2:32 PM
58	Urban Planning Use	8/13/2014 2:02 PM
59	Personal informational purposes	8/13/2014 1:48 PM
60	Neighborhood planning and historical studies	8/13/2014 1:11 PM
61	independent analysis	8/13/2014 12:29 PM
62	I look up addresses to help people find out who their Council Perso is	8/13/2014 11:05 AM
63	Business Use: Construction.	8/13/2014 10:41 AM
64	legal research	8/13/2014 9:35 AM
65	Personal use - identifying approx property lines and assessed value.	8/13/2014 9:31 AM
66	state inspector	8/13/2014 7:44 AM
67	Land Surveying	8/13/2014 7:32 AM
68	Neighborhood Association	8/12/2014 9:25 PM
69	to find out if houses are in the flood plain and what services are provided at houses while house hunting for my first home	8/12/2014 7:47 PM
70	Finding and seeing places of interest	8/12/2014 7:43 PM
71	Land surveying research	8/12/2014 5:01 PM
72	Land Survey info - benchmarks, approx. elevation, etc	8/12/2014 3:08 PM
73	Police forensic mapping	8/12/2014 1:52 PM
74	work related research - answering genealogical and local history related correspondence	8/12/2014 1:50 PM
75	Generate basic maps	8/12/2014 1:03 PM
76	Survey related matters. Aerial photos, sewer lines, subdivisions. General idea of property in area of survey project.	8/12/2014 11:48 AM
77	Civil Engineering studies	8/12/2014 11:46 AM
78	Fire dept use	8/12/2014 11:37 AM
79	I use the aerial view to help with Utility locates.	8/12/2014 10:33 AM
80	Business: Engineering / Telecommunications	8/12/2014 9:19 AM
81	Im in maintenance/code enforcement for a small city in Louisville metro. Lojic is an invaluable tool for our office. We use it for property location, owner identification, boundaries, acreage calculation among a host of other uses such as measuring street length for paving.	8/12/2014 9:18 AM
82	Working on Route for County School Bus Drivers	8/12/2014 7:35 AM
83	house and by the house numbers streets avenues roads blvds and parkways parks and lakes	8/11/2014 10:18 PM
84	Locating addresses that don't show up on google maps	8/11/2014 6:52 PM
85	Architect. helping clients look at their existing property, utilities, slopes, property limitations, etc.	8/11/2014 5:45 PM
86	It helps my service company locate our customers location	8/11/2014 3:34 PM

Q2 What data/information do the GIS/Mapping applications provide that is critical to your work?

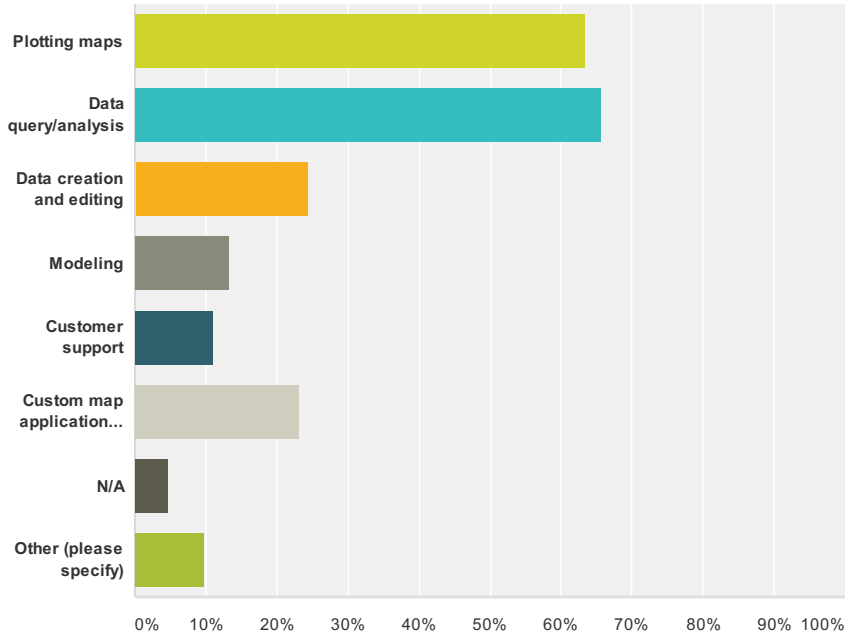
Answered: 82 Skipped: 119

#	Responses	Date
1	property data	8/22/2014 3:02 PM
2	Zoning and property information	8/22/2014 1:52 PM
3	1. Plat & Minor Plat information 2. Flood Insurance Rate Map Information 3. Contour Information	8/22/2014 11:16 AM
4	Zoning, ownership, flood plain	8/22/2014 9:08 AM
5	plat map and flood plain	8/22/2014 8:53 AM
6	PVA, SEWER CONN., TOPO, LOT LINES, AERIAL, LOT DIMENSIONING,	8/22/2014 8:52 AM
7	Parcel lines, addresses, zoning information, GPS control point locations	8/21/2014 6:14 PM
8	utility locations, survey control points	8/21/2014 4:56 PM
9	Aerial, block & lot, dimensions, etc.	8/21/2014 1:54 PM
10	lot lines, distances, texts, flood map, utilities, planning cases, zoning,	8/21/2014 10:12 AM
11	lot size, zoning, location of utilities and easements	8/20/2014 7:10 PM
12	This doesn't work with Windows 8	8/20/2014 2:05 PM
13	Property Information (zoning, ownership, size, dimensions), street/ROW information, topographic information	8/20/2014 1:29 PM
14	ZONING, LOT SIZES, FLOOD INFORMATION	8/20/2014 11:52 AM
15	Parcel Information, topography, utilities/sewers, road classification/responsibility; soils, streams, development tools; measurement tools; zoning; floodplains.	8/20/2014 9:20 AM
16	Plat Maps	8/20/2014 7:02 AM
17	Historical information unavailable elsewhere	8/19/2014 2:47 PM
18	Property boundaries and ownership	8/19/2014 1:47 PM
19	Existing and historic conditions, basic topography, tree mass, existing buildings and pavement, sewer line and direction of flow, info on floodplains, wetlands and steep slopes, zoning and other planning, utility and political data,...	8/19/2014 10:33 AM
20	I use almmost all aspects: property, zoning, development info, sensitive features, elevations, aerials, etc. etc. etc.	8/19/2014 9:38 AM
21	Boundaries	8/19/2014 6:32 AM
22	Property lines, topo, zoning, road classification, dimensions,	8/18/2014 12:22 PM
23	PROPERTY REPORTS. TOPOGRAHY, FLOOD INFORMATION, ZONING	8/18/2014 11:20 AM
24	Zoning, lot dimensions/size, flood, public works street class, and sewer facilities.	8/17/2014 8:21 PM
25	parcel and right-of-way data, owner and property information	8/17/2014 4:30 PM
26	parcel sizes	8/16/2014 9:58 PM
27	zoning, form district, sewers, property lines, owner info	8/16/2014 5:23 PM
28	Property owner, property lines, municipal information, utilities	8/16/2014 9:40 AM
29	Boundaries	8/16/2014 9:09 AM
30	site lot information, legal data, adjacent property information and zoning classification	8/16/2014 4:46 AM
31	Arial, property	8/15/2014 9:15 PM
32	I look for information about the property including flood planes, utilities and other property specific information that is difficult to obtain from other sources.	8/15/2014 8:48 PM
33	property ownership information	8/15/2014 7:48 PM
34	providing addresses and ROW	8/15/2014 1:57 PM
35	zoning, neighborhood services	8/15/2014 12:10 PM
36	Information on buildings, land, tax information.	8/15/2014 10:43 AM
37	Owner, assessed value, acreage, sale records, historic images.	8/15/2014 8:31 AM
38	Parcel Info, Utilities, Roads. Railroads. Streams	8/14/2014 5:39 PM
39	elevations and sewer locations help me in researching development potential also property lines and links to pva and zoning information is very helpful	8/14/2014 4:29 PM
40	property ownership, zoning, utilities	8/14/2014 3:49 PM
41	Mostly parcel info and zoning info	8/14/2014 3:40 PM
42	Zoning, flood prone areas, address location	8/14/2014 11:56 AM

43	Ownership information, Acreage, Sales history, zoning, value assement, parcel info.	8/14/2014 11:51 AM
44	it serves my needs - i measure buildings - etc.	8/14/2014 10:39 AM
45	Property Owners	8/14/2014 9:49 AM
46	Ownership of adjoining property owners and identifying the site area (visually)	8/14/2014 9:49 AM
47	flood, zoning	8/14/2014 9:36 AM
48	property boundaries, dimensions, lot and development info	8/14/2014 9:29 AM
49	locations & distances	8/14/2014 9:28 AM
50	Neighborhood info, zoning, lot sizes	8/14/2014 8:20 AM
51	Elevation, building perimeter, topiary (tree canopy) msd.	8/13/2014 10:07 PM
52	Parcel ID, Ownership, Transfer history, Assessment, Neighborhood, Council District, Historic Preservation, Flood Prone, Zoning, parcel lines, street addresses	8/13/2014 5:27 PM
53	Elevation, Location of Trees, Roads, Buildings	8/13/2014 3:34 PM
54	Location of property to see if that property is in the floodplain	8/13/2014 3:10 PM
55	Parcel - critical	8/13/2014 2:48 PM
56	pva data	8/13/2014 1:54 PM
57	Good aerial maps; addresses of properties not listed on PVA's website.	8/13/2014 11:55 AM
58	-Parcel size and shape -Zoning	8/13/2014 11:33 AM
59	Zoning, lot dimensions, aerial maps, plat maps..	8/13/2014 11:12 AM
60	Assessment amounts, ownership	8/13/2014 10:56 AM
61	Land size, utilities access, owner info, parcel id	8/13/2014 7:28 AM
62	measurments from poles/peds to buildings. addresses for traffice control and view of area	8/13/2014 6:16 AM
63	Zoning info; general development info-- MSD, flood plain/wetlands, topographic, aerial showing trees, etc.; lot dimensions; also, for existing buildings, the aerial shows layout of property, allows you to count parking spaces, shows curb cuts, etc.	8/12/2014 5:14 PM
64	Maps, address, parcel numbers, deed book/page and property lines	8/12/2014 4:40 PM
65	Parcel data; utility data; zoning data	8/12/2014 2:56 PM
66	Sewer routes and ownership information	8/12/2014 1:56 PM
67	Measurement Tools Accurate Property boundaries Flood Area Info Sewer Data Contouring	8/12/2014 1:15 PM
68	Street locations, maintenance responsibilities, right of way.	8/12/2014 11:21 AM
69	Identifying a building and obtaining measurements.	8/12/2014 11:16 AM
70	Parcel identification, zoning and other Planning & development information, sewer availability, FEMA info, fire protection district, environmental constraints, Public Works road class,	8/12/2014 10:31 AM
71	Parcel information and identification.	8/12/2014 10:01 AM
72	personal use for real estate	8/12/2014 9:23 AM
73	Subd. Layout/ lot info., aerial photography for surrounding locations, sewer locations	8/12/2014 9:22 AM
74	DI sheet, PVA information, zoning information, street information,	8/12/2014 9:11 AM
75	LOT SIZE, FLOOD INFO, ELEVATION, ZONING, UTILITIES	8/12/2014 9:06 AM
76	location, visual air-view, ownership	8/12/2014 7:37 AM
77	Lot location, Census data.	8/11/2014 8:14 PM
78	Lot Dimension and ownership	8/11/2014 8:09 PM
79	Property sales data	8/11/2014 4:44 PM
80	Zoning, Parcel Size, Flood Zone	8/11/2014 4:20 PM
81	zoning, sanitary sewers, property owner, DI tool	8/11/2014 3:31 PM
82	All mapping data	8/11/2014 3:23 PM

Q3 In your work, how do you use GIS/Mapping applications? Check all that apply:

Answered: 82 Skipped: 119

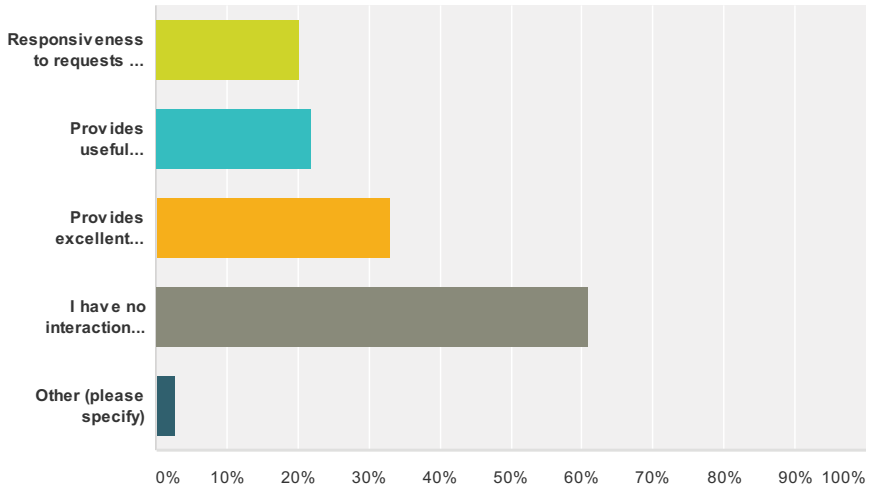


Answer Choices	Responses	
Plotting maps	**63.41%**	52
Data query/analysis	**65.85%**	54
Data creation and editing	**24.39%**	20
Modeling	**13.41%**	11
Customer support	**10.98%**	9
Custom map application development	**23.17%**	19
N/A	**4.88%**	4
Other (please specify)	**9.76%**	8
Total Respondents: 82		

#	Other (please specify)	Date
1	Survay work	8/22/2014 11:16 AM
2	location of utilities, zoning	8/20/2014 7:10 PM
3	doesn't work Windows 8	8/20/2014 2:05 PM
4	SAME AS ABOVE	8/20/2014 11:52 AM
5	measuring	8/19/2014 9:38 AM
6	pva information	8/17/2014 4:30 PM
7	Information-gathering for real estate purchases/development	8/15/2014 12:10 PM
8	Use data to give customers a visual of the information pertaining to property.	8/12/2014 5:14 PM

Q4 Check the items that our mapping staff does well.

Answered: 182 Skipped: 19

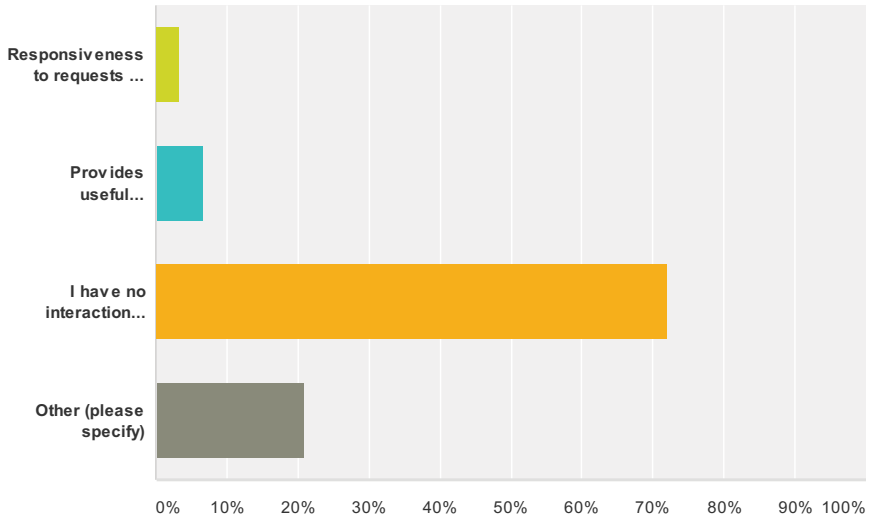


Answer Choices	Responses	
Responsiveness to requests for support	**20.33%**	37
Provides useful assistance	**21.98%**	40
Provides excellent mapping resources for the community	**32.97%**	60
I have no interaction with the mapping staff	**60.99%**	111
Other (please specify)	**2.75%**	5
Total Respondents: 182		

#	Other (please specify)	Date
1	Tell Ken Bailey that he is not allowed to retire!	8/21/2014 1:51 PM
2	While I may not interact, my legislative does recently for instance working on issue involving Waterfomt Park	8/14/2014 7:18 AM
3	having users jump through mulitple hoops to access data that other cities make freely available	8/13/2014 4:02 PM
4	I have just recently met individuals on mapping staff, so I have no comment in this category.	8/13/2014 3:31 PM
5	I once needed a map for our neighborhood association and the LOJIC staff at MSD were very helpful.	8/12/2014 9:28 PM

Q5 Check the items that our mapping staff need to improve.

Answered: 182 Skipped: 19



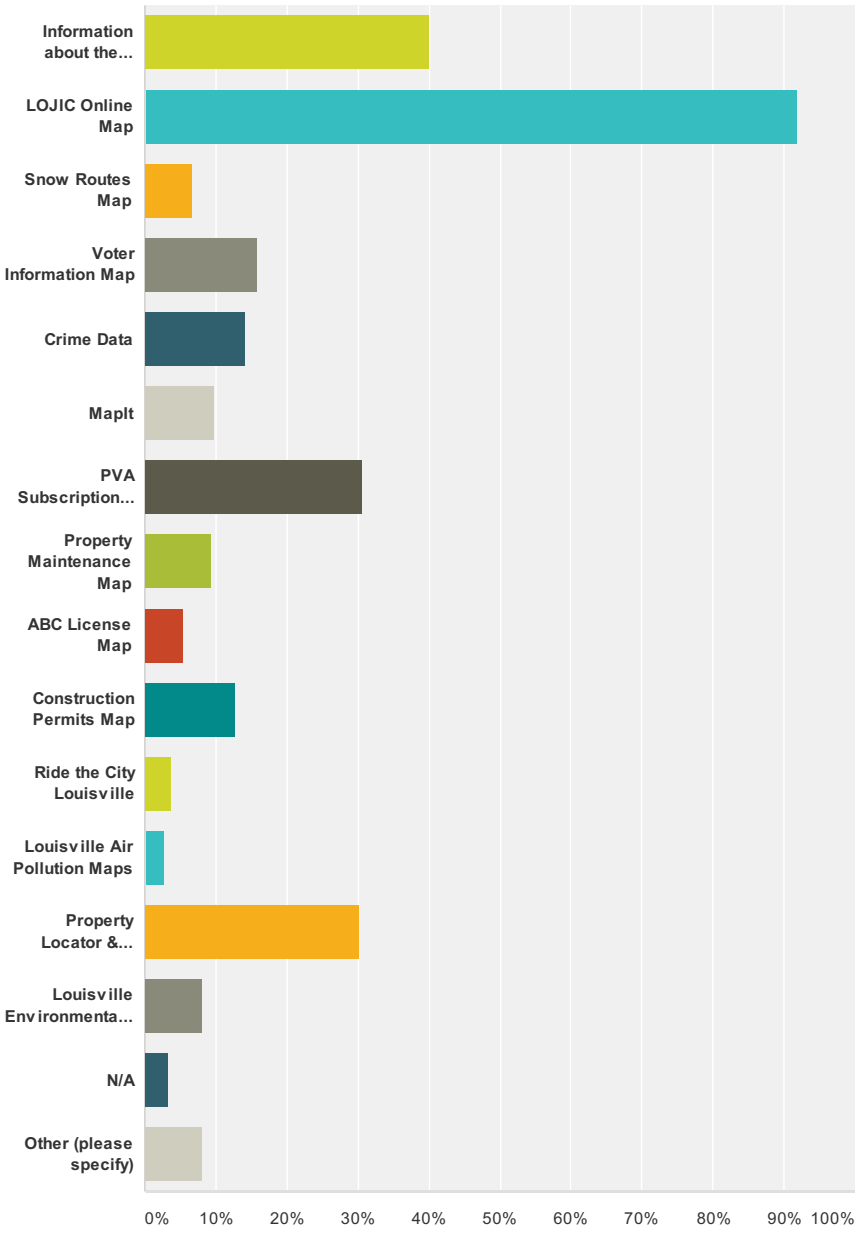
Answer Choices	Responses	
Responsiveness to requests for support	**3.30%**	6
Provides useful assistance	**6.59%**	12
I have no interaction with mapping staff	**71.98%**	131
Other (please specify)	**20.88%**	38
Total Respondents: 182		

#	Other (please specify)	Date
1	flexibility in mapping data developing new applications	8/22/2014 3:06 PM
2	.	8/22/2014 1:53 PM
3	Miss having full PVA Support	8/22/2014 8:54 AM
4	I thought the previous system seemed easier to navigate. Staff seemed put off when I suggested that the new system was less user friendly.	8/21/2014 6:20 PM
5	No improvements needed, really.	8/20/2014 1:15 PM
6	ALL AREAS ARE FINE, I HAVE HAD NOT ISSUES	8/20/2014 11:53 AM
7	none	8/20/2014 9:21 AM
8	I see no need for improvement. I wish all staff, at other agencies, were as helpful.	8/19/2014 4:42 PM
9	Better, more dependable, and easier use of computers and printing in MSD lobby.	8/19/2014 1:59 PM
10	none	8/19/2014 1:56 PM
11	None that I'm aware of.	8/19/2014 7:09 AM
12	I have always had excellent customer service working with mapping staff, including Ken and Jane.	8/18/2014 5:16 PM
13	I've had limited interaction with staff but the times I've spoken with them they were very helpful.	8/18/2014 12:31 PM
14	I always get help when I need it.	8/18/2014 12:23 PM
15	NO ANSWER	8/18/2014 11:23 AM
16	coordination with Metro Government	8/18/2014 10:06 AM
17	Clearly identify how community can get gis help. Offer community workshops on how to use GIS and LOJIC easier layouts for printing, then be able to save them be able to interact with google earth	8/18/2014 8:41 AM
18	excellent mapping staff	8/17/2014 4:31 PM
19	i have never had an issue with LOJIC information services	8/16/2014 4:47 AM
20	None	8/14/2014 9:08 AM
21	People can always improve. At this time I do not know how they can improve. Fantastic support.	8/14/2014 8:42 AM
22	You all do a great job and have always done so	8/13/2014 10:34 PM

23	Share more on site without charge.	8/13/2014 9:35 PM
24	Marketing or making known to Metro employees what services are available at what costs.	8/13/2014 5:28 PM
25	understanding that things are rapidly changing in the world of spatial data	8/13/2014 4:02 PM
26	Yes	8/13/2014 2:49 PM
27	No improvement needed 0 except adding a checkbox here for "No improvement needed"	8/13/2014 1:14 PM
28	NONE AT THIS TIME	8/13/2014 12:57 PM
29	I have no concerns with this group. Good Job!	8/13/2014 11:32 AM
30	It would be nice if it showed any easements	8/13/2014 10:45 AM
31	nothing	8/13/2014 9:36 AM
32	Provide full access to LOJIC at the Louisville Free Public Library or other Government facilities. Offer copies of LOJIC full access software to nonprofit community based organizations.	8/12/2014 9:28 PM
33	None. They are all extremely helpful.	8/12/2014 1:04 PM
34	N/A The staff has always been very helpful on request.	8/12/2014 10:02 AM
35	Expanded utility information would be helpful IE: water and gas	8/12/2014 9:27 AM
36	I have no issue with the mapping staff	8/12/2014 9:13 AM
37	NONE	8/12/2014 9:07 AM
38	Partner with PVA again; extend to surrounding counties	8/11/2014 4:22 PM

Q6 Check the applications in which our mapping data works well for you.

Answered: 182 Skipped: 19



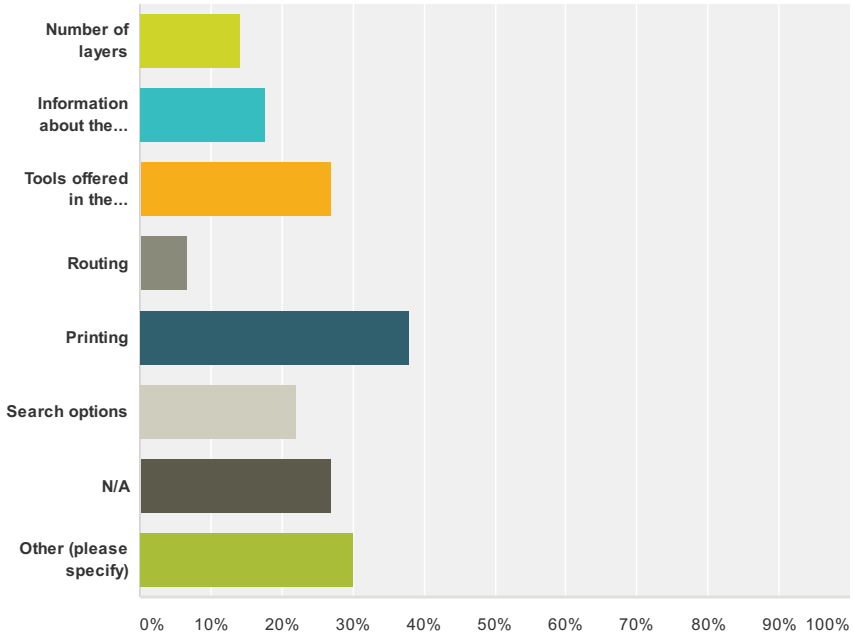
Answer Choices	Responses	
Information about the layers (metadata)	**40.11%**	73
LOJIC Online Map	**91.76%**	167
Snow Routes Map	**6.59%**	12
Voter Information Map	**15.93%**	29
Crime Data	**14.29%**	26
MapIt	**9.89%**	18
PVA Subscription Service	**30.77%**	56
Property Maintenance Map	**9.34%**	17
ABC License Map	**5.49%**	10
Construction Permits Map	**12.64%**	23

Ride the City Louisville	**3.85%**	7
Louisville Air Pollution Maps	**2.75%**	5
Property Locator & Market Information	**30.22%**	55
Louisville Environmental And Property Search (LEAPS)	**8.24%**	15
N/A	**3.30%**	6
Other (please specify)	**8.24%**	15
Total Respondents: 182		

#	Other (please specify)	Date
1	Integration with PVA data, even requiring a login, would make so much sense. To have to switch between mapping programs is extremely inefficient.	8/22/2014 9:10 AM
2	I'm disappointed that the PVA is no longer linked to the parcel mapping either when you request a specific parcel nor is there an option to browse the LOJIC mapping in the case where you don't know the street address of the parcel. I know the PVA is not a function of LOJIC, but I believe there was a better relationship between the two databases at one time.	8/21/2014 6:20 PM
3	Planning/Zoning information	8/21/2014 4:05 PM
4	It might be nice to make all levels free	8/19/2014 9:30 PM
5	I have not used or found much of this information through logic.com	8/19/2014 12:21 PM
6	More free access to PVA data more information on streams and watersheds CSO layer with real time overflow data	8/18/2014 8:41 AM
7	When looking at properties in Louisville, i like being able to view floodplain. I miss the the ild version which gave more info PVA info	8/16/2014 9:11 PM
8	Who knows? I can't get to them!	8/16/2014 8:13 AM
9	trash pickup	8/14/2014 3:55 PM
10	Whew! I'm 74 years old and I think I need a tutorial on LOJIC	8/14/2014 7:18 AM
11	LOJIC Online Map works reasonably well, with some quirks. However, being disconnected from Clerk, PVA, and Sheriff are serious pitfalls in functionality. Integration with these entities (and others) as well as linking a separate layer of crowd sourced community condition data would help uplift this good resource.	8/13/2014 3:31 PM
12	I am not sure about the others but will investigate	8/13/2014 1:14 PM
13	Have not heard of the majority of the others.	8/12/2014 9:28 PM
14	Survey info - benchmarks, control points	8/12/2014 3:08 PM
15	Can you really find construction permits?	8/12/2014 2:57 PM

Q7 Check the items about our mapping data and applications that need improvement.

Answered: 163 Skipped: 38



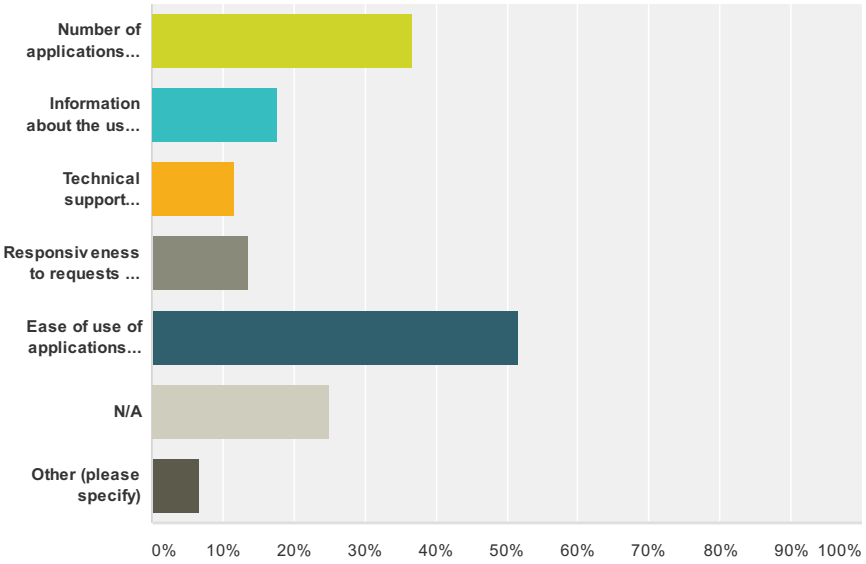
Answer Choices	Responses	
Number of layers	**14.11%**	23
Information about the layers (metadata)	**17.79%**	29
Tools offered in the application	**26.99%**	44
Routing	**6.75%**	11
Printing	**38.04%**	62
Search options	**22.09%**	36
N/A	**26.99%**	44
Other (please specify)	**30.06%**	49
Total Respondents: 163		

#	Other (please specify)	Date
1	It would be nice if property owner addresses and deeds were available on the LOJIC maps.	8/22/2014 1:54 PM
2	Be able to obtain printout of a community, such as Springhurst, or identify where to get a detailed large format printout.	8/22/2014 10:36 AM
3	would like to be able to plot to a selected scale, as specified by me.	8/21/2014 2:24 PM
4	I think it is a valuable tool as is. Too many options could make it cumbersome.	8/21/2014 1:29 PM
5	I think the property addresses, etc. should be default	8/20/2014 1:16 PM
6	ALL IS GOOD, I HAVE HAD NO ISSUES	8/20/2014 11:53 AM
7	PDF map output would be nice	8/19/2014 9:32 PM
8	I really miss the ability of downloading a map to use as a key map on my drawings.	8/19/2014 4:44 PM
9	Need more review and printing options such as: more flexibility on map scales; more print options such as 11 x 17, 8.5 x 11 portrait, etc.	8/19/2014 2:03 PM
10	Re the lojic site: I realize you're trying to make money by limiting information on property transfers to those that pay exorbitant monthly fees, but it also puts individual users at a disadvantage in the marketplace. I don't need to see the names of previous owners, but the amounts would be useful (and were for the period they were available). A clearer floodplain indication would also be useful. "Review zone" doesn't make me feel like you're showing the actual zone, just an area you're looking to reexamine.	8/19/2014 12:25 PM
11	Print to a scale. Return the "zoom to selected area" feature as the previous version. Reduce distortions at close zoom.	8/19/2014 10:11 AM
12	mobile app?	8/19/2014 9:40 AM

13	Ability to prints maps to a scale and resolution that is useable for preliminary design and planning.	8/18/2014 5:34 PM
14	I would like to see some training about what is available. I'm sure there are tools out there that I could use and I don't know about.	8/18/2014 12:33 PM
15	The addition of an 11x17 is a great help I need to be able to save from the site directly to my computer without printing and scanning.	8/18/2014 12:24 PM
16	measuring tool needs improvement	8/18/2014 11:24 AM
17	ability to create maps that can be copied into other programs like PowerPoint	8/18/2014 10:08 AM
18	We always want more. How about a new layer focusing on trees and canopy cover	8/18/2014 8:46 AM
19	Needs lot dimensions / actual lot size for all properties.	8/17/2014 8:23 PM
20	lots of info missing that could be utilized	8/17/2014 4:32 PM
21	It would be nice to map like google does fro 1 address to the next. Lojic show what side of street houses are at & google doesnt.	8/16/2014 9:15 PM
22	property purchase history	8/16/2014 9:09 PM
23	Your website	8/16/2014 8:14 AM
24	I use it at night, seems slow during "business hours" may be due to overall internet usage.	8/16/2014 1:35 AM
25	Exact ROW information	8/15/2014 1:58 PM
26	sometimes the info layers overlap with the left side menu list making it difficult to read and navigate	8/15/2014 12:12 PM
27	I have noticed that when zooming in, the street names get hard to read because the font gets smaller. It would be helpful if the font stays the same or gets larger.	8/15/2014 11:08 AM
28	Making Data available for download in multiple formats	8/14/2014 5:40 PM
29	freer access to all information available like it use to be. surely metro government would be generating more money, through property tax increases due to development, from widespread free access to all data than is being generated by subscriptions	8/14/2014 4:37 PM
30	Fema requires the deed information that used to be provided.	8/14/2014 11:39 AM
31	Sometimes spelling can be an issue. It would help to not have to put the entire address. Give choices of similar addresses. for example, if someone typed 1932 Map the addresses could pop up 1932 Maple Ave 1932 Maple Street or 1932 Mapline drive Then you could choose which address you were looking for.	8/14/2014 8:52 AM
32	None	8/13/2014 7:30 PM
33	Custom boundaries with data capture and export. Custom scaling to perfect subject area map.	8/13/2014 5:31 PM
34	Cost. Raw layers should be free.	8/13/2014 4:10 PM
35	needs to be free and accessable... also, many layers need updatin	8/13/2014 4:03 PM
36	Linking to other agencies, and information sources, as well as refreshing the API for the user's experience as well as stronger search engine would be key.	8/13/2014 3:32 PM
37	I like the LOJIC maps very much - I think they are one of the best and easiest mapping sites (to use) out there.	8/13/2014 3:14 PM
38	Make GIS layers available for download	8/13/2014 2:05 PM
39	I would like the last sale date to appear on the parcel report for the online interactive report.	8/13/2014 1:17 PM
40	User experience, design	8/13/2014 11:14 AM
41	It all needs to be free	8/13/2014 10:57 AM
42	More robust free PVA dada	8/13/2014 9:33 AM
43	There should be better abilities to create custom maps and then print them, properly cited of course.	8/12/2014 9:31 PM
44	More info available. IE. the parcel report sucks	8/12/2014 7:47 PM
45	Deed Book/Page references should NOT be a subscription service, and should be available from the lojic online map (as either part of the "Lite" parcel report, or as layer text.)	8/12/2014 5:08 PM
46	Printing and copying for computer usage.	8/12/2014 2:58 PM
47	Ability to print scaled drawings is helpful	8/12/2014 1:17 PM
48	it is the best tool to acheive my job dispatching	8/11/2014 10:21 PM
49	Lot dimensions would really be helpful.	8/11/2014 8:17 PM

Q8 Check the items about GIS/Mapping applications and tools that work well for you.

Answered: 163 Skipped: 38

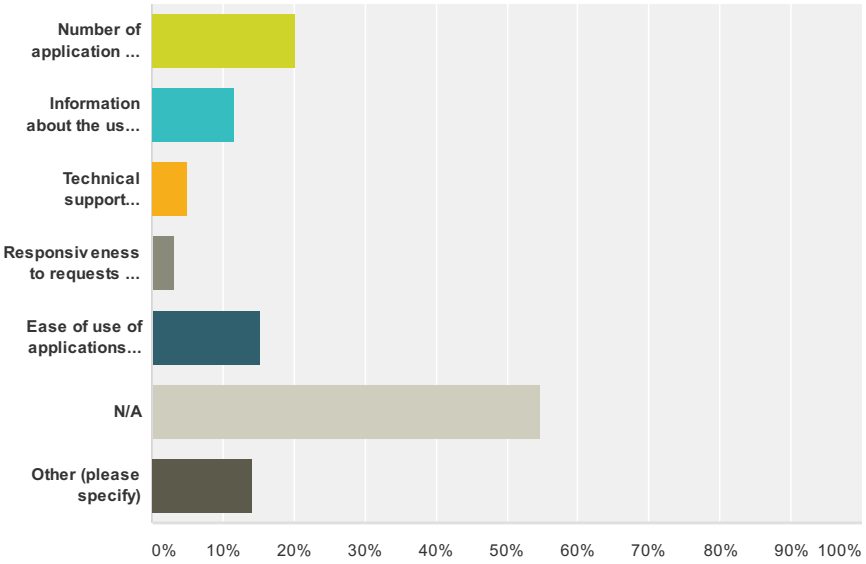


Answer Choices	Responses	
Number of applications and tools	**36.81%**	60
Information about the use of application and tools	**17.79%**	29
Technical support pertaining to applications and tools	**11.66%**	19
Responsiveness to requests for support	**13.50%**	22
Ease of use of applications and tools	**51.53%**	84
N/A	**25.15%**	41
Other (please specify)	**6.75%**	11
Total Respondents: 163		

#	Other (please specify)	Date
1	general site information and aerial imagery	8/19/2014 9:32 PM
2	The more information available the better.	8/18/2014 5:34 PM
3	I don[t know what technical support is available. It would be great to have more you tube videos that show how to use the applications and tools	8/18/2014 8:46 AM
4	see response to question 5	8/16/2014 9:15 PM
5	Who knows, I can't get to them!	8/16/2014 8:14 AM
6	need more of above available to ordinary citizen	8/13/2014 9:36 PM
7	sorry I honestly don't see much need to change what you have - I am very pleased that this site is user friendly	8/13/2014 3:14 PM
8	The LOJIC map application is fairly simple and easy to use, with that said, it could be more robust.	8/12/2014 9:31 PM
9	Up until the deed book and page references were removed from the lojic online map "parcel report", everything was fine.	8/12/2014 5:08 PM
10	I did not check tech support or responsiveness because I have never needed it, that should speak volumes.	8/12/2014 9:29 AM
11	great map and is updated frequently keeping with the changing city	8/11/2014 10:21 PM

Q9 Check the items about our mapping applications and tools that need improvement.

Answered: 163 Skipped: 38



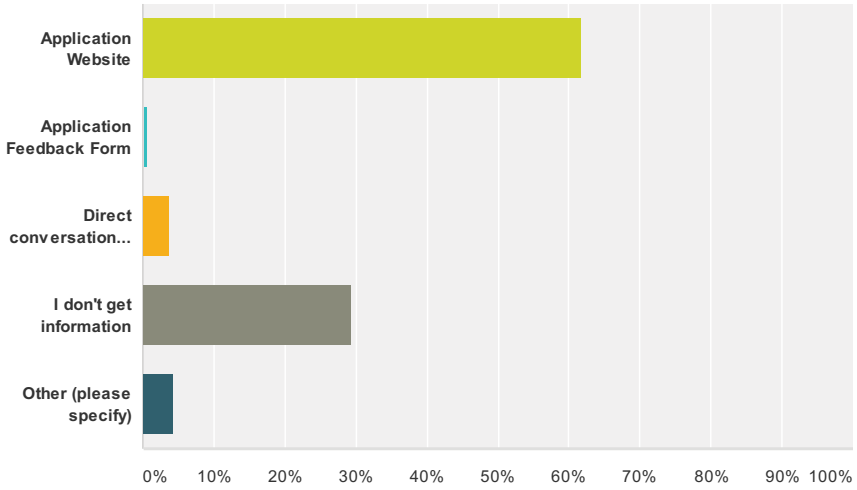
Answer Choices	Responses	
Number of application and tools	**20.25%**	33
Information about the use of application and tools	**11.66%**	19
Technical support pertaining to applications and tools	**4.91%**	8
Responsiveness to requests for support	**3.07%**	5
Ease of use of applications and tools	**15.34%**	25
N/A	**54.60%**	89
Other (please specify)	**14.11%**	23
Total Respondents: 163		

#	Other (please specify)	Date
1	See comment above	8/22/2014 1:54 PM
2	Excellent as is.	8/21/2014 1:29 PM
3	would like to see a printable street map tool, one that gives streets and names that be used to show a location type map to give to clients.	8/21/2014 10:18 AM
4	NONE	8/20/2014 11:53 AM
5	pdf map output/ saving	8/19/2014 9:32 PM
6	More review options (more scale options), better printing options (portrait, 11x17, etc.), and better/easier use in the MSD lobby.	8/19/2014 2:03 PM
7	How about the names? I don't even know what the difference is between this section and the previous ones: "mapping applications" vs. "mapping data and applications" vs. "GIS/mapping applications". To someone that swims in the bureaucracy, I'm sure it's all perfectly clear. To normal humans, not so much.	8/19/2014 12:25 PM
8	I want to save directly from my screen the map as a pdf.	8/18/2014 12:24 PM
9	ability to use saved maps as images in other applications like powerPoint, etc	8/18/2014 10:08 AM
10	accuracy of property lines. They are sometimes running thru a house, when really they don't.	8/18/2014 8:59 AM
11	As I said above - you tube demonstrations and directions.	8/18/2014 8:46 AM
12	see response to question 5	8/16/2014 9:15 PM
13	Your webs application	8/16/2014 8:14 AM
14	see above...	8/15/2014 12:12 PM
15	free access to all information	8/14/2014 4:37 PM
16	Printing and the ability to zoom to a certain extent to include an entire property.	8/14/2014 9:10 AM

17	I really don't know enough to be useful here. Instinctively, I value your service and results.	8/14/2014 7:19 AM
18	Many Metro employees are not aware that services are available, so more outreach to individual departments is needed.	8/13/2014 5:31 PM
19	Raw data	8/13/2014 4:10 PM
20	Please have MSD add storm drainage pipes in addition to the san sewers.	8/13/2014 7:36 AM
21	Need to provide better access to information, integrate with additional metro departments.	8/12/2014 9:31 PM
22	Deed Book/Page references need to be included somewhere on the logic online map.	8/12/2014 5:08 PM
23	keep up good work	8/11/2014 10:21 PM

Q10 What is the most common way you get information regarding these mapping applications now?

Answered: 160 Skipped: 41

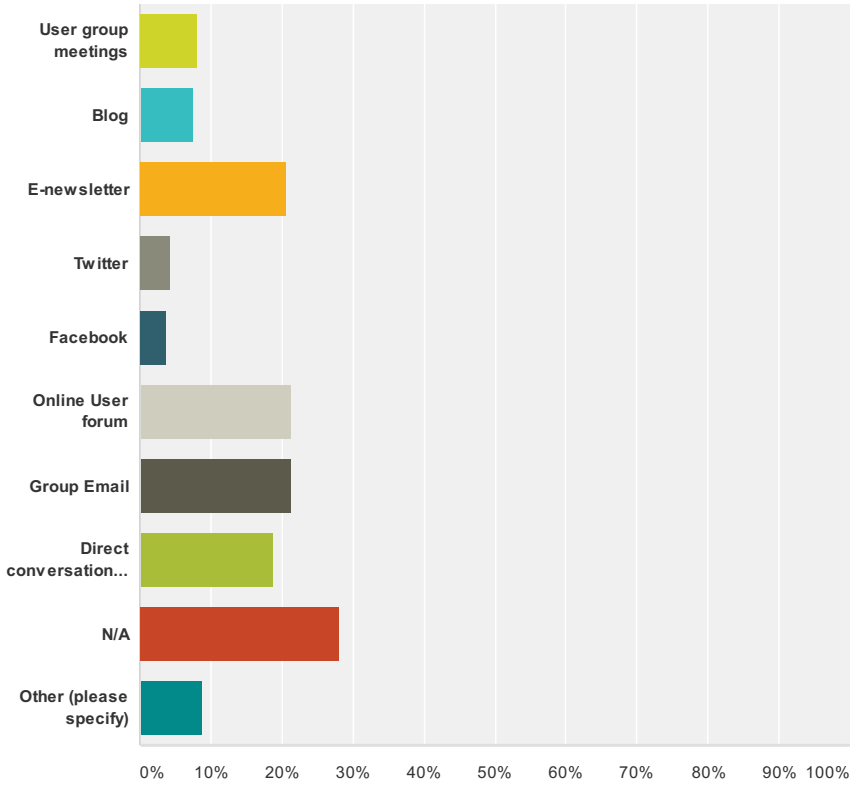


Answer Choices	Responses	
Application Website	**61.88%**	99
Application Feedback Form	**0.63%**	1
Direct conversations with mapping staff	**3.75%**	6
I don't get information	**29.38%**	47
Other (please specify)	**4.38%**	7
Total		**160**

#	Other (please specify)	Date
1	Metro website	8/14/2014 3:56 PM
2	had handout for usining 311 App	8/14/2014 7:20 AM
3	This survey.	8/13/2014 5:32 PM
4	Other organizations outside of LOJIC	8/13/2014 4:15 PM
5	N/A	8/13/2014 4:07 PM
6	Asking others who use / try to use existing data.	8/13/2014 3:51 PM
7	general use	8/12/2014 5:14 PM

Q11 What would be your preferred methods of communications from or about mapping applications?

Answered: 160 Skipped: 41



Answer Choices	Responses	
User group meetings	**8.13%**	13
Blog	**7.50%**	12
E-newsletter	**20.63%**	33
Twitter	**4.38%**	7
Facebook	**3.75%**	6
Online User forum	**21.25%**	34
Group Email	**21.25%**	34
Direct conversations with mapping staff	**18.75%**	30
N/A	**28.13%**	45
Other (please specify)	**8.75%**	14
Total Respondents: 160		

#	Other (please specify)	Date
1	Search for specific help topics	8/21/2014 4:06 PM
2	Shown on website or pop-up new info, same as the survey does now.	8/19/2014 10:15 AM
3	user info on website	8/17/2014 4:36 PM
4	email	8/15/2014 7:35 AM
5	Metro website	8/14/2014 3:56 PM
6	enhanced Help anf FAQ links would be easiest	8/14/2014 11:41 AM
7	20 minute tutorial geared to Council needs	8/14/2014 7:20 AM
8	user friendly intuitive use of site	8/13/2014 9:38 PM

9	LOJIC should send liaisons to agency staff meetings.	8/13/2014 5:32 PM
10	A feedback/voting/bug forum like http://feedback.uservoice.com/	8/13/2014 4:15 PM
11	clear and easily searchable info on your web site	8/13/2014 4:07 PM
12	On line information with examples/videos	8/12/2014 7:48 PM
13	FAQ's	8/12/2014 3:10 PM
14	on line lojic maps	8/11/2014 10:23 PM

Q12 What other suggestions do you have for expanding the use of LOJIC and/or improving services?

Answered: 70 Skipped: 131

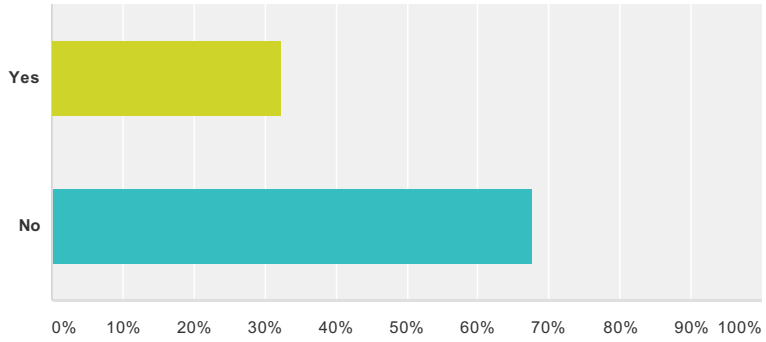
#	Responses	Date
1	It would be nice if we could get adjoining property information (owner name, address, deed, parcel ID) for multiple properties at once, rather than clicking each parcel individually. This would greatly decrease the amount of time we spend creating notice labels for planning and design submittals.	8/22/2014 1:56 PM
2	Keep up the good work.	8/22/2014 10:36 AM
3	I would like to see the age and building material in the Parcel or General Information reports.	8/22/2014 9:49 AM
4	Integration with PVA (at least member portion of their Website) and County Clerk records database	8/21/2014 6:23 PM
5	would like to be able to type in the scale I would like to zoom to.	8/21/2014 3:06 PM
6	Defiantly don't let Ken retire..just offer him so much money he has to stay.	8/21/2014 1:52 PM
7	The only issue I have with the interactive map is that when I attempt to print or save to PDF the layers (specifically floodplain) prints in a much bolder face than it appears on the screen. This means that the printed/pdf saved maps are much harder to see/use than the view on the screen. Also, landscape printing issues as appearing on 2 pages.	8/21/2014 1:49 PM
8	Maybe consider adding a GQ layer if one hasn't already been. I haven't found it yet if one is there.	8/21/2014 1:32 PM
9	show more utilities	8/21/2014 10:19 AM
10	none	8/20/2014 7:13 PM
11	NONE	8/20/2014 11:54 AM
12	Make all levels and information free to all users	8/19/2014 9:32 PM
13	The benchmarks set throughout the County are NOT user friendly. In many instances, I have been forced to park several hundred feet away from a monument, as there is no room on a shoulder, or in an owner's drive. While setting GPS control points is great, if the end user has a conventional system, or in my case a robotic total station, using the monument can prove to be hazardous.	8/19/2014 4:48 PM
14	Keep up the great work on this most valuable service to the community.	8/19/2014 2:04 PM
15	Let public users who are using data for community projects have free access	8/19/2014 12:37 PM
16	On the lojic site, the popup that comes up on the map after an address search is too large. It covers 1/4 of the map and I usually close it immediately. The "address" heading and x/y seem pretty useless. If they were removed and some other stuff shrunk, it would still be useful and would be less obtrusive.	8/19/2014 12:30 PM
17	Include property transfer history	8/19/2014 10:27 AM
18	Remove the recent require subscription to pva for items, basically, return to the way it was before. With all the new construction, street directions, bike lanes, etc. an aerial at least every 2 years or better. Planned changes could be noted by an added icon for future development reference	8/19/2014 10:15 AM
19	None that I can think of.	8/19/2014 7:13 AM
20	Works great	8/19/2014 6:33 AM
21	As I understand it, Lojic data is sometimes free in other cities, even when private entities need the information in CAD format. With the availability of online data such as Google Earth and other sources, is it time to simply give the information for free so that the preliminary planning stages of design can occur without that burden of cost? Screen shots of the mapping can be saved as jpg files and imported into CAD, then traced, so the information is still useable, just not in the truest legal sense. I may not be making my point clearly, but data in this day is so easy to come by without any cost and it may be beneficial to analyze who is actually paying to use the data and if the revenue off selling the data is so little that it's worth it to give away for free.	8/18/2014 5:41 PM
22	I usually only use just a handful of features, but I believe that there are many more out there available I need to be introduced too. I just don't have the time to explore on my own to figure them out, but a concise training would help.	8/18/2014 12:35 PM
23	ipad app would be great.	8/18/2014 12:25 PM
24	bring back the ability to make images out of the maps!	8/18/2014 10:12 AM
25	being able to print a specific site would be very useful, especially if it was truly accurate	8/18/2014 9:00 AM
26	Increase partnerships Metro parks - have a layer on recreation ideas, on natural areas, trails. work with jcps - put all of their bus routes on it with real time bus locations work with google earth - make a seamless interaction	8/18/2014 8:51 AM
27	Actual lot size.	8/17/2014 8:25 PM
28	it would be great to have more accurate parcel data (we realize the limitation is on PVA), also data for other counties including Oldham and Bullitt, and better connectivity/real time data with PVA. also would be fantastic to have utility map info from LG&E, LWC, AT&T, TWC. MSD should provide stormwater layers/data, MSD should allow more data availability for sewer tracing, and link their PSC location data and Record number/manhole numbers in LOJIC	8/17/2014 4:36 PM
29	Already stated	8/16/2014 9:16 PM
30	Provide more utility information	8/16/2014 9:42 AM
31	Let the user use the service then ask them to fill out a survey.you survey does n' t work very well either.	8/16/2014 8:17 AM

32	increase options for scaled zoom for a property, higher quality graphics at street level, added hyperlinks for property data and adjacent properties such as quick reference info to adjacent property owners and deed book pages-necessary in permitting drawing submittals.	8/16/2014 4:50 AM
33	I love it. I am married to an IT Geek and I know you all like to fix things that aren't really broken and this works for me and I am cranky. Thanks	8/16/2014 1:36 AM
34	It would be nice to be able to find specific ROW information. I know the boundaries lines exist, but have a true statement about the ROW information would be nice to have, instead of digging in old records.	8/15/2014 2:00 PM
35	It would extremely helpful within mapping if complex/development name was a searchable feature. To be abe to go to area or Meadowvale Subdivision on map, or to be directed to area of Claibourne Crossing Apartment Complex in LOJIC for example. Being able to sign-up for notifications on site updates, newletters, etc would also be very helpful.	8/15/2014 11:34 AM
36	We miss seeing the purchase and sale history for properties, that was very useful to us within this application.	8/15/2014 8:33 AM
37	Kepp the funding up. Great app.	8/15/2014 7:35 AM
38	Reconnect with PVA and other relevant public data FREE of charge. Every other place I've lived, all public information records were available without having to pay a subscription!	8/14/2014 6:03 PM
39	Make Data free	8/14/2014 5:41 PM
40	na	8/14/2014 10:02 AM
41	None	8/14/2014 9:51 AM
42	None	8/14/2014 9:11 AM
43	online Video sources or webinars that could inform, teach, or bring new information to the users	8/14/2014 8:56 AM
44	none	8/13/2014 10:23 PM
45	A shift in the method by which lojic is funded so that more layers of data can be made open source and publicly available without charge, perhaps by shifting the cost to PVA-related changes in mapping data.	8/13/2014 10:16 PM
46	None	8/13/2014 7:31 PM
47	LOJIC should send liaisons to agency staff meetings to explain available services and facilitate special requests.	8/13/2014 5:32 PM
48	Release raw data layers collected with tax dollars for free, charge for custom layers, analysis, print maps.	8/13/2014 4:15 PM
49	please open our city's data. dozens of major cities have opened their GIS data to app developers, scientists, citizens, and activists with massive community benefits. Without open GIS data our city will be left behind, and seen as a place that stymies innovation through either ignorance or greed.	8/13/2014 4:07 PM
50	The CDA members, including myself, have identified examining best practices in GIS consortia as a work task, and we are happy to assist. We will not be complete with this effort by Aug. 22nd, as the project has not begun. I would like to have the opportunity for us to provide our external review and rectify it with any internal review as well. The goal of providing more public data to the public, even in raw form is essential to improving Louisville. We recognize that LOJIC needs to maintain, and even grow revenue sources. I just hope personally, that this need can be balanced with providing public data openly. Value added by LOJIC staff for public data in internal use should may be a place for pay for services, but only if the raw data is provided indexed by date, in easily downloadable, machine readable form, according to the Mayor's Executive Order. Data should be released to the Open Data Portal in a timely manner. This can certainly vary based on the nature of the data, and review for security purposes. The parcel layer needs constant amendment and updating, and is an exampel of a layer that requires significant input by LOJIC resources, yet having the current parcel layer available to the public is of key import. Therefore, exploring alternative funding sources for updating critical data layers and providing them free to the public should be examined. One possible resource should be fully reviewed - fees attached to each deed recorded in Clerk's office at time of recordation. Sure, this resource will fluctuate with the economy and deed transfers; however, it is directly tied to activity that brings the need for updating parcels. Additional fees could be assessed to parcel split requests, zoning changes, etc. (if they are not already done so, and if so, then increased).	8/13/2014 3:51 PM
51	Please make GIS layers available for download	8/13/2014 2:06 PM
52	N/a	8/13/2014 2:02 PM
53	Add a tree canopy / heat island display to the interactive map. Add pending liquor license and pending construction and demolition permits to the interactive map. Add environmental monitoring data to the interactive map (waterway pollution readings and so on).	8/13/2014 1:23 PM
54	NONE	8/13/2014 11:33 AM
55	Make data available for citizens to use for free, especially if LOJIC hasn't done custom work on top of that data.	8/13/2014 11:15 AM
56	Coordinates of property corners. Plats.	8/13/2014 10:47 AM
57	Please have better linkage with PVA information	8/13/2014 7:37 AM
58	offer a 45degree look at things would make it easier to do measurements	8/13/2014 6:20 AM
59	Offer GIS training and certification. This is a skillset in demand, and certainly could enhance our citizens employability.	8/12/2014 9:33 PM
60	Publish more data	8/12/2014 7:48 PM
61	Even if the full property tax cards are now part of the PVA subscription service, at a minimum the Deed Book and Page reference for each parcel should be included somewhere on the online map-- either as a toggleable text layer, or as an extra line on the "lite parcel report" accessed through right clicking a parcel.	8/12/2014 5:14 PM
62	Please try and get the other counties to add their parcel data. It seems silly that you cannot get Bullitt or Oldham. I know it's all about the money, but surely these guys will come around. The Oldham gis is already online with the same data, why won't they give this to you?	8/12/2014 3:00 PM
63	Pole locations would be extremely helpful, also if it is any way possible to somehow reference or link Google maps or create local street views. Currently I use both LOJIC and Google to create permits and to site as reference when doing work, it would be wonderful to only have to use LOJIC for all of my needs.	8/12/2014 11:24 AM
64	Instead of charging for certain services, it should be free. That's what we pay taxes for.	8/12/2014 11:20 AM

65	List the waste water treatment plant that serves a property so we don't have to trace it down on the sewer atlas map.	8/12/2014 10:36 AM
66	N/A	8/12/2014 10:04 AM
67	put the lot size back on the first page	8/12/2014 9:25 AM
68	a zoom tool that allows you to drag a square across the screen the zoom to where you want it to	8/12/2014 9:23 AM
69	please keep it up and working. It is the best tool ever	8/11/2014 10:23 PM
70	Lot dimensions would be very helpful.	8/11/2014 8:20 PM

Q13 If you are open to be contacted for additional input, please include your name and preferred email address below.

Answered: 158 Skipped: 43



Answer Choices	Responses	
Yes	**32.28%**	51
No	**67.72%**	107
Total		**158**

Q14 If yes, please provide your contact information

Answered: 51 Skipped: 150

Answer Choices	Responses	
Name:	100.00%	51
Company:	0.00%	0
Address:	0.00%	0
Address 2:	0.00%	0
City/Town:	0.00%	0
State:	0.00%	0
ZIP:	0.00%	0
Country:	0.00%	0
Email Address:	100.00%	51
Phone Number:	0.00%	0

#	Name:	Date
1	Walter Zalewski	8/22/2014 10:37 AM
2	Rosalind Streeter	8/22/2014 9:49 AM
3	david hogan	8/22/2014 9:12 AM
4	Kevin Phillips	8/21/2014 6:23 PM
5	Brian Bewley	8/21/2014 3:07 PM
6	John Wilson	8/21/2014 1:52 PM
7	Tim Crumbie	8/21/2014 1:32 PM
8	bill	8/21/2014 10:20 AM
9	barbara satterly	8/20/2014 7:13 PM
10	LESLIE MOORE	8/20/2014 11:54 AM
11	Tom Pifer	8/19/2014 9:33 PM
12	Al Matherly	8/19/2014 4:48 PM
13	Bruce Herrick	8/19/2014 3:27 PM
14	David Dries	8/19/2014 2:04 PM
15	Matt	8/19/2014 12:31 PM
16	Ashley Bartley	8/19/2014 9:41 AM
17	Brent Monroe	8/19/2014 7:13 AM
18	Carrie Peers	8/18/2014 12:35 PM
19	suzanne cheek	8/18/2014 12:26 PM
20	Mike Kmetz	8/18/2014 10:18 AM
21	David Wicks	8/18/2014 8:52 AM
22	Andrea George	8/17/2014 8:25 PM
23	Chris Crumpton	8/17/2014 4:37 PM
24	Gale	8/16/2014 9:17 PM
25	Steve Thibaudeau	8/16/2014 9:42 AM
26	Steve Gravatte	8/16/2014 4:51 AM
27	Kim Logsdon Zinicola	8/16/2014 1:37 AM
28	Bret Osborne	8/15/2014 2:00 PM
29	Alan Ward	8/15/2014 8:34 AM
30	bill spurlock	8/14/2014 6:04 PM
31	kevin greene	8/14/2014 5:23 PM
32	Charles Morrissette, P.E.	8/14/2014 11:42 AM
33	Doug Watson	8/14/2014 9:39 AM

34	Stephen Rusie	8/14/2014 9:11 AM
35	Natalie Gernert	8/14/2014 8:56 AM
36	Councilman Tom Owen	8/14/2014 7:20 AM
37	John Coots	8/13/2014 10:36 PM
38	Jared McNeil	8/13/2014 10:17 PM
39	Jeana Dunlap	8/13/2014 5:33 PM
40	Chris Harrell	8/13/2014 3:51 PM
41	Ray Brundige	8/13/2014 1:23 PM
42	KEN MARTIN	8/13/2014 12:59 PM
43	Albert J Wolf	8/13/2014 11:14 AM
44	Frank Clements Jr	8/13/2014 10:48 AM
45	judie	8/13/2014 6:20 AM
46	Stephen Peterson	8/12/2014 9:34 PM
47	Sharon Starks	8/12/2014 5:17 PM
48	James Sparks	8/12/2014 1:54 PM
49	Ron Cundiff	8/12/2014 9:31 AM
50	Laura Lusch	8/12/2014 9:25 AM
51	Chris Mosher	8/11/2014 8:20 PM
#	**Company:**	**Date**
	There are no responses.	
#	**Address:**	**Date**
	There are no responses.	
#	**Address 2:**	**Date**
	There are no responses.	
#	**City/Town:**	**Date**
	There are no responses.	
#	**State:**	**Date**
	There are no responses.	
#	**ZIP:**	**Date**
	There are no responses.	
#	**Country:**	**Date**
	There are no responses.	
#	**Email Address:**	**Date**
1	wjzalewski@outlook.com	8/22/2014 10:37 AM
2	rosalind.streeter@gmail.com	8/22/2014 9:49 AM
3	dhogan@valbridge.com	8/22/2014 9:12 AM
4	kevin@endris.com	8/21/2014 6:23 PM
5	PLS3477@gmail.com	8/21/2014 3:07 PM
6	jw@nssenvironmental.com	8/21/2014 1:52 PM
7	Tcrumbie@geoscienceky.com	8/21/2014 1:32 PM
8	schrolllandsurveying@aol.com	8/21/2014 10:20 AM
9	bsatterly@bellsouth.net	8/20/2014 7:13 PM
10	mooreassoc@bellsouth.net	8/20/2014 11:54 AM
11	tpifer@mercer-trans.com	8/19/2014 9:33 PM
12	almatherly@att.net	8/19/2014 4:48 PM
13	bruce.herrick@burgessniple.com	8/19/2014 3:27 PM
14	DavidADries@gmail.com	8/19/2014 2:04 PM
15	matt2.commercial@yahoo.com	8/19/2014 12:31 PM
16	abartley@qk4.com	8/19/2014 9:41 AM
17	james.monroe@louisvilleky.gov	8/19/2014 7:13 AM
18	carrie.peers@louisvilleky.gov	8/18/2014 12:35 PM
19	scheek@hcrky.com	8/18/2014 12:26 PM

20	mkmetz@jeffersontownky.gov	8/18/2014 10:18 AM
21	dwicks1@gmail.com	8/18/2014 8:52 AM
22	theappsourcellc@gmail.com	8/17/2014 8:25 PM
23	chris@bluestoneengineers.com	8/17/2014 4:37 PM
24	kennethia.howlett@jefferson.kyschools.us	8/16/2014 9:17 PM
25	thibfam@bellsouth.net	8/16/2014 9:42 AM
26	gravattedesign@gmail.com	8/16/2014 4:51 AM
27	kimizini78@gmail.com	8/16/2014 1:37 AM
28	bosborne@ucsinc.com	8/15/2014 2:00 PM
29	award@carriervibrating.com	8/15/2014 8:34 AM
30	bill@spurlocks.net	8/14/2014 6:04 PM
31	kevin.greene2@ge.com	8/14/2014 5:23 PM
32	charles@millerwihry.com	8/14/2014 11:42 AM
33	appraiser@kyrealtypro.net	8/14/2014 9:39 AM
34	srusie@jeffersontownky.gov	8/14/2014 9:11 AM
35	natalie.gernert@jefferson.kyschools.us	8/14/2014 8:56 AM
36	tom.owen@louisvilleky.gov	8/14/2014 7:20 AM
37	threecoots3@att.net	8/13/2014 10:36 PM
38	notyou007a@gmail.com	8/13/2014 10:17 PM
39	jeana.dunlap@louisvilleky.gov	8/13/2014 5:33 PM
40	TheHarrell@gmail.com	8/13/2014 3:51 PM
41	brundige@iglou.com	8/13/2014 1:23 PM
42	kmartin40213@yahoo.com	8/13/2014 12:59 PM
43	ajosephwolf@hotmail.com	8/13/2014 11:14 AM
44	frank@lichtefeldinc.com	8/13/2014 10:48 AM
45	jastroud@ucsinc.com	8/13/2014 6:20 AM
46	peterson.jstephen@gmail.com	8/12/2014 9:34 PM
47	sharonstarks@yahoo.com	8/12/2014 5:17 PM
48	jim.sparks@louisvilleky.gov	8/12/2014 1:54 PM
49	citymaint@prospectky.com	8/12/2014 9:31 AM
50	llusch@earthlink.net	8/12/2014 9:25 AM
51	cmosher@insightbb.com	8/11/2014 8:20 PM
#	**Phone Number:**	**Date**
	There are no responses.	

LOJIC Strategy Innovation Discovery Brief

Appendix 4

Notes from Interviews With:

Ted Smith, Louisville Metro Chief of Civic Innovation

Michael Schnuerle, Local Open Data Advocate, Civic Data Alliance

James Fee, URS Spatial IT Director, GIS Consultant and Blogger

Jack Dangermond, Esri President

John Antenucci, Plangraphics President

LOJIC Strategy Innovation Interview with Ted Smith

September 13, 2014

1) **What technological, business and societal trends will have significant impact on the direction and use of municipal information systems (including GIS) in the next three to five years?**
   - Plethora of location info/data now available, expansive market, new sources (satellite, UAV, obliques, etc), need for more granular info on smaller areas.
   - Municipalities must have a heightened awareness of what is going on, (Used Google traffic as example). However, Google will not share data.
   - The private sector has pushed way in front with creating, marketing and profiting from location data.
   - Place-based data is valued and GIS is common denominator. There is a pressure on about "who knows what"…. Issue of who has "ground truth".
   - Need/expectation for current data and that locals are best sources.
   - Need for sophistication and attention to data stewardship; outdated data = bad decisions.
   - Public/taxpayer sense that location data is already paid for and is common good.
   - Nuances of security/sensitivity with open data, ie, utilities, health, categories of crime activity.
   - Recognizes sensitivity of some data and Home Land Security; make street level and up available; policies need to be reviewed and updated/JSB

2) **How do you see the future relationship between municipal GIS and the large commercial mapping providers (i.e. Google Maps)? How do we reconcile the local need for accuracy, currency and detail for mission-critical applications with the mass market for easily accessible general information?**
   - No easy answer, OpenStreetMap is best example, but crowdsourcing has its risks.
   - Totally Open Source is the only really interesting option, but give data to everyone not just Google.
   - Google doesn't do GIS… They make/sell maps, it's an easy location viewer with API. Maps are the most trivial part. Data is the driver and the power.
   - It's not either/or, Google vs LOJIC, need for more awareness of best uses.
   - Private sector/vendors always pose opportunities and issues; locals need to be more open and nimble in response.
   - Experience with data portals has not been good; some want raw data, some want information.
   - Site address and centerline/range data should be freely available.
   - The details must be held onto… Google cannot do what LOJIC can to meet partner needs.
   - Simply conceding to "the market" would be a mistake. Having public feedback on data content/quality is counterproductive, leave in the hands of the pros.
   - Best position is to be platform independent and develop totally responsive design apps.

3) **What are the most impressive recent innovative practices in technology, governance and/or funding you have seen related to municipal information systems?**
   - Services for fees… Or fees tagged onto things such as permits.
   - Tiered services: basic is free, more data/analytics for a fee or subscription.

- Offset costs via activity or transaction fees, fees for service, earmarks for system/data maintenance.

4) **There is a mounting push for open/free data. How do you balance providing free data with the locally incurred costs to collect, create, maintain and host geospatial data? What is the business case for making locally maintained geospatial data open and freely accessible?**
   - Open data is the immediate lightening rod… and transparency is its cousin.
   - Agrees that there is a marked difference between data and information. The data should be made available, but LOJIC is positioned to supply information.
   - LOJIC business model has worked; would not have been built without partnership and cost sharing.
   - Too much local fixation on cost, we need to get over it, it's what we do and how we do our work.
   - Must continue funding as cost of gov't service; focus on value/ROI to gov't and public.
   - Will never pay for system/data maintenance by selling data; wrong to demand cost recovery.
   - Public/taxpayer perception that location data is already paid for and is common good.
   - Demand focuses on parcel data, built environment, site addresses, centerlines/ranges.
   - Favor fees over taxes, fees for services, data updates, custom data extracts for projects.
   - Think in terms of cost allocation and not cost recovery.
   - Startups can help move process forward.

5) **How can Louisville better leverage its GIS resources (i.e. LOJIC)?**
   - As far as a Business case… cost recovery math is not the right conversation.
   - A business case or justification for LOJIC isn't necessary…. It's is simple the cost of doing business. We cannot do without it.
   - Does not like the word "optimized" as a goal because "that is next to 'efficiency' which results in lay-offs". Prefers to look at "opportunities and ideas"…. "Do we understand the work we are NOT doing?"
   - Look for "minimum sunk investment"…. What needs to be done?
   - Provide services for fees, but not as primary activity. Price services higher if data is free. (JMP)
   - Referred to the competitiveness of the Mayor, and the desire to be equal to or ahead of other cities in development and opportunities. LOJIC plays a vital role in that strategy.
   - Should explore (possibly with best practices consultant) correlation between competitive "smart cities", depth of their use of GIS, and public accessibility of location data.
   - Get businesses excited about the use of local data.
   - Leveraging GIS for economic development; GIS easily embedded in a suite of uses.
   - Community-generated data interoperable with LOJIC (ie, trees)

   - **General Comments:**
   - Can't imagine turning LOJIC off, too vital for local work and services.
   - Keep the data up and not the presentation; don't define self as 'we make maps' - we maintain data vital for services

LOJIC SI Interview Questions

Michael Schnuerle of YourMapper and the Civic Data Alliance
This document available at: bit.ly/LOJIC-MS
(Italicized comments added by C. Bynum from personal interview notes)

1) How would you define what the Louisville and Jefferson County Information Consortium (LOJIC) is, and what does it mean to you?

LOJIC is the area's GIS organization that collects and maintains GIS data from public and private sources. To me it seems to be a source of useful information for public organizations and the public itself.
LOJIC is the community's shared GIS, user agencies collect/maintain spatial data necessary to perform gov't operations.

2) What is your perception of what LOJIC is/means to Metro Louisville and the community at large?

LOJIC does the work vital to making local governments run properly for their citizens, especially in terms of planning, emergency, safety, reporting, and knowledge of our city's 3 dimensional interconnectedness.
LOJIC is the shared repository of local spatial data necessary to make our community gov'ts work; reduces redundancy, various web, data, map products to assist citizens.

3) How do you feel Louisville can make better use of LOJIC?

If LOJIC can get most of its public data in the hands of the public, I see it as a benefit to the local economy, national technology services, non-profits, journalists, programmers, entrepreneurs, educators, and data scientists. It also allows the creation of services for residents by private companies. All of this helps the city with more tax revenue, more businesses and qualified workers relocating here, and puts Louisville on par with other cities.
There is wide business and community interest in LOJIC providing open access to most data; would promote entrepreneurs, economic development. LOJIC should also provide access to services via mobile devices. Raw data via portals for public/private use, likely shapefiles or KML. Spatial analysis would best be handled by LOJIC. API's for direct interaction with LOJIC real-time data could come later (ie, crime analysis, fire response, etc.) Buildings, parcels (boundaries, value, owner), street centerlines, site addresses and pavement with all data in lat/long are priorities.
Recognizes some data is private/secure
Would benefit the community by improvements to Google and Apple Services.
Others that would benefit is the Code for America Brigade
People would pay for the analysis that LOJIC compiles
Publish in lat/long because of the desire for publishing nationally.

4) There is a mounting push for open/free data. How do you balance providing free data with the locally incurred costs to collect, create, maintain and host geospatial data? What is the business case for making locally maintained geospatial data open and freely accessible?

- Save money by reducing FOIA/KORA requests
- Use the latest technology to minimize licensing and hardware costs
- Sell value-add services around data analysis, processing data, printable maps, and custom work.

CFA brigade would be a good source for defining value-added services. FTP access for open data would be a good start.

Use Amazon Hosted Services
Some things may be hard to switch but doable and cost effective
Rework the website to promote custom work.

5) What technological, business and societal trends do you think will have significant impact on the direction and use of municipal information systems and associated data (including GIS) in the next three to five years?

Online
All (public) data is moving from being locked inside internal systems to being online on web systems, to reach people instantly and be reused.

Technology changes
As companies put discovered, researched or request data into their products, your same version of the raw data is less valuable, and there goes your business model.
Social media presence, blogs, facebook, twitter for customer service and greater exposure for LOJIC.
Twitter Cards from Portland to share parks.
Mobile is the future – everyone is getting an iPad so Architect future solutions with simplicity in mind.
Simple solutions, small focus
Have local user groups to find out what people want, or have brown bag lunches at incubators.

It's public data
Data is required to be collected to do the job of governing, and has already been paid for by taxpayers.

Changing gov Landscape
Open data is not going away, and political, public, and business pressures will continue to mount.

Legality
If the data can be obtained by a KORA request for non-profits/news orgs, it should be on your public data portal. If it's not you run the risk of those orgs putting the data online, and your existing business model crumbles.

Courier Journal Example:
http://www.courier-journal.com/story/opinion/editorials/2014/09/04/public-data-like-see/15085963/

Open Data Help

Help understanding “open data” and assistance with getting data online.

- http://sunlightfoundation.com/
- https://usodi.org/
- http://www.codeforamerica.org/
- https://www.data.gov/open-gov/
- http://opendatahandbook.org/
- http://opengovdata.org/

ROI of Open Data

http://radar.oreilly.com/2013/02/roi-open-data-economy-value.html

http://www.socrata.com/blog/open-data-roi/

http://www.omidyar.com/blog/business-case-open-data

http://www.statetechmagazine.com/article/2013/12/albuquerques-open-data-efforts-are-delivering-roi-city

http://www.informationweek.com/regulations/government-technologist-whats-the-roi-of-open-government/d/d-id/1086671

https://sunlightfoundation.com/blog/2014/05/28/how-proactive-release-of-public-records-could-help-lower-costs/

http://smartdatacollective.com/bigdatastartups/188046/how-open-data-portals-will-stimulate-innovation-and-economic-growth

Information from similar cities with open GIS data, with Contact Info

Lexington, KY Open GIS

Info from From Open Lexington organization: LFUCG made a modest sum from GIS licensed data maybe $1mil. They also gave a lot of data away to researchers, reporters, students and university officials. They spent money on processing those licensed requests. Similarly, the costs for complying with all of these non-revenue generating requests was also not trivial. Investing in the open data catalog as repository for GIS data allowed them to spend far less on servicing those requests although I am unaware of the exact amount saved. Code for Lexington helped them install and maintain a CKAN instance running on AWS.

GIS data is made available at http://data.lexingtonky.gov - includes property parcels, street centerlines, watershed, vacant land, impervious, tree canopy, land use, zoning, traffic signals, sewershed.

Chris Doerge | Geographic Information | Division of Computer Services
Lexington-Fayette Urban County Government | 200 E Main St, 714 | Lexington, Kentucky 40507
Phone: (859) 367-4989 | Email: cdoerge@lexingtonky.gov | Web: www.lexingtonky.gov/gis

Click here for full details and breakdown.

South Bend, IN Open GIS

- The City of South Bend is of the mindset that citizens have paid for the data once, so they don't charge for GIS data
- The county did is not of that mindset and does charge for data
- The city has an agreement that they can give county data out to consultants, and they are liberal with that approach

- The city has worked hard to build up their own datasets, which they release for free
- They have 2 staff positions, one is paid for by the sewer department and one is paid from the general fund
    - The position paid for by the sewer department tends to focus on sewer and water GIS, but not exclusively
    - They wanted to have a revenue-making department pay for a position
- They use ArcGIS 10.1, which is not the newest, but is close
- They were fortunate enough to be small enough to qualify for ESRI's small city ELA

Sacramento County, CA Open GIS
www.sacgis.org

As a public tax supported organization, we feel our constituents are paying for the data we maintain and create through the taxes they pay. Some data we house is sensitive in nature, so we don't distribute that content.

Some organizations charge for data when extensive work is required to create it or there is media involved.

Can you explain how these costs changed when you went from not publishing your data to the public, to making it open?

The amount of time saved by publishing the selected data to the internet compared to answering email requests and getting permissions from data owners showed us there was a benefit to this model. Time = Money.

What were all the reasons for opening your data (economics, public service, reduce FOIA/KORA requests, politics, public pressure, etc)?

We were presented with a document and training session directed at sharing government data. We agreed and chose to comply.

John Culbert
culbertj@SacCounty.NET
916-875-5731

Denver
http://data.denvergov.org/
- This data is constantly updated by the City and County of Denver. Files are basically transferred over automatically from the GIS dep't on a regular basis.
- Denver Public Schools uses a lot of this data to inform our boundary and board district decisions, as well as providing basemap data, address points, streets, parcels, etc.
- Parcels are included in this portal

Doug Genzer Technology Services at City County of Denver
douglas.genzer@ci.denver.co.us

Detroit
http://d3.d3.opendata.arcgis.com/

- This is a partnership between Data Driven Detroit (D3) and ESRI. There are some big datasets on here, and not everything is 'straight from the City', rather products of analysis that D3 has come up with.

Greg Parrish Data and Technical Manager Data Driven Detroit
gregory@datadrivendetroit.org

Other Contacts
People to interview who can provide valuable information and ideas

Pat Smith
http://citycollaborative.org/

Christopher Cprek
http://www.lvl1.org/

Bret Walker
http://www.louiewatch.com/

Patrick Piuma
http://udstudio.org/

Dannie Gregoire
http://www.minecraftlouisville.com/

Chris Harrell
http://www.lazarusllc.com/

LOJIC Strategy Innovation Video Conference Interview with James Fee

September 25, 2014

1) **What technological, business and societal trends will have significant impact on the direction and use of GIS in the next three to five years? How can established municipal GIS partnerships such as LOJIC best keep pace with these changes?**
   - People expect ready access to and interaction with on-line maps (ie, Tempe 311)
   - There is an intersection between municipal data, information and mobile social media (ie, Portland, OR widget in Twitter)
   - People love to share where they are, what they see/experience.
   - Sharing is desired, but to what degree remains uncertain.
   - The future is very mobile.
     - URS giving 50,000 employees an iPad.
     - Solutions must be architected for this method of delivery
     - Trend toward multiple apps, each doing one thing very well… As simple as possible
     - People want "easy button" access and expect everything for free.
   - Scott Morehouse, Esri, "ArcGIS is hard to use because it's scientific software."
   - More practical/scalable for entity to have several versions of thematic/focused apps rather than a "one app does all" approach.

2) **Will cloud-based data storage and application software services become the norm for municipal GIS entities that have significant server architecture and concerns about data integrity or security?**
   - Hosting through other services removes the headaches of updates, versions etc.
   - Reliability should not be an issue. Cloud is reliable depending on what you pay (level of service).
   - ESRI, Amazon and others have highest levels of certification and reliability.
   - Most mission-critical granular data and apps should stay internal behind firewall.
   - Security could be locational (ie, New Orleans during Katrina).

3) **How do you see the future relationship between municipal GIS and the large commercial mapping providers (i.e. Google Maps)? How do we reconcile the local need for accuracy, currency and detail for mission-critical applications with the mass market for easily accessible general information?**
   - LOJIC must weigh pros/cons, answer question of "Is city better off with more accurate address data in Google?"
   - Google errors often "blamed" on locals; local data is usually better than Google's.
   - Google may not update often, even with open access to local data.
   - Question of how Open Street Map might play into this.

4) **Esri's current web-GIS technology seems to encourage independence and innovation within user organizations when it comes to applications and user interfaces. How do you see this affecting the ability to maintain data and applications standards and how might this impact the operations of a municipal GIS consortium?**
   - The main problem with ESRI's web/cloud licensing is that is it relatively undefined and cost-uncertain, unlike EC2.
   - Question of how much now versus raised price in the future.
   - It could get "dirty" as far as who gets access and who has rights.
   - Used example of Pitney Bowes as the opposite perspective: charge for data and give software away.
   - Most people want CSV or KML; what good is it to download data in geodatabase format.

5) **What are the most impressive recent innovative practices in technology, governance and/or funding you have seen related to GIS?**
   - Explore grant money to share data (ie, Esri grant for Arizona portal). This is often overlooked and can help fund initiatives.
   - Look for alternative partnerships to collect common data and host data portals (ie, universities, non-profits and other groups gathering useful information to be shared through LOJIC)
   - Most spatial technologies seem focused on lighter, faster and cheaper; from paper maps/viewers to immediate and real-time accessible.

6) **There is a mounting push for open/free data. How do you balance providing free data with the locally incurred costs to collect, create, maintain and host geospatial data? What is the business case for making locally maintained geospatial data open and freely accessible?**
   - Citizens demand data based on tax funding, but the distinction between safe and sensitive data (e.g. utilities, critical infrastructure) must still be maintained.
   - GIS data is created/maintained by government to do its work, paid for via taxes.
   - By this point people in government should know what GIS is and that things cost money.
   - Issue of cost versus value, trend from "how do we make money on our GIS" to thinking "how can we share and open up access to our GIS resources."
   - Open data spurs economic development, entrepreneurs.

7) **What other insights or advice can you share regarding the growth and sustainability of large, municipal GIS enterprises?**
   - Mobile and use of the Cloud are realities!
   - Engage the community
     - Partnering with local groups (bike riders as example).
     - Explore co-working space, idea incubators leading down the path to Business Intelligence.

- Used example of a “Drunk App” developed in Portland (?) to assist those who have had too much to drink with finding a safe way home.
- Stated that you can see on Open Street Map who is doing the most editing for Louisville and find out why.
- Suggested a local GIS Hackathon to tap into what the community wants and to gather fresh and bright ideas.

LOJIC Strategy Innovation Interview with Jack Dangermond

October 1, 2014

Note: Jack hit the ground running with the first question, illustrated on a white board and did not strictly keep to the questions we provided. What follows is a loose thread of his comments.

1) **What technological, business and societal trends will have significant impact on the direction and use of GIS in the next three to five years? How can established municipal GIS partnerships such as LOJIC best keep pace with these changes?**

- Computer/info technology industry evolution re: GIS…
- Tabular and map data; automated drafting
- Procedural/workflow automation, data centric (ie, SAP, ArcInfo)
- "Watson" cognitive computing 5-10 years out, massive data, diagnostic/analytical, societal
- Esri experimenting with connecting to big data/computing
- Evolving from data centric architecture to web-centric GIS with distributed databases
- Portals control content, access, integration
- GIS evolving from data warehouses to "server-ized" confederation of databases and portals with more focus on device and software agnostic platforms
- ArcGIS 10.3 introduces/leverages more robust portal technologies
- LOJIC partners could put all data in a portal such as AGOL or keep on-site and expand to include/incorporate outside services.
- Esri has spent millions on may applications to encourage/leverage public-sourcing of data collection (ie, Collector)

2) **Will cloud-based data storage and application software services become the norm for municipal GIS entities that have significant server architecture and concerns about data integrity or security?**

- There's always a concern about security surrounding some infrastructure data
- Put non-sensitive data in the Cloud somehow, explore hybrid approach
- Not opposed to all on-site data warehouse, but Cloud storage/services are usually cheaper and more easily maintained than extensive IT infrastructure
- AGOL gained high security status this year

3) **How do you see the future relationship between municipal GIS and the large commercial mapping providers (i.e. Google Maps)? How do we reconcile the local need for accuracy, currency and detail for mission-critical applications with the mass market for easily accessible general information?**

- Local data is authoritative and better, commercial entities know this
- Much public/private pressure to open access to local data
- Level of access depends on local priorities and regulations
- LOJIC could explore use of leased or subscription data via Cloud services for base data

- Should explore web-serving more core operational data such as parcels, addresses, centerlines
- Always a great need and benefit for home-grown plan/topo data which could be shared globally via Esri's Community Maps program

4) **Esri's current web-GIS technology seems to encourage independence and innovation within user organizations when it comes to applications and user interfaces. How do you see this affecting the ability to maintain data and applications standards and how might this impact the operations of a municipal GIS consortium?**

- Can get bogged in user expectations for customization
- Must enforce data standards for content and currency for critical applications, analysis
- Migrate LOJIC as a web-enabled, open platform for dramatic growth in use and value

5) **What are the most impressive recent innovative practices in technology, governance and/or funding you have seen related to GIS?**

- LOJIC is a model community GIS and has a simple proven cost-share formula
- Enterprise GIS doesn't work if you have to "pass the hat" to fund and maintain, it's how you do your work and deliver services

6) **There is a mounting push for open/free data. How do you balance providing free data with the locally incurred costs to collect, create, maintain and host geospatial data? What is the business case for making locally maintained geospatial data open and freely accessible?**

- Recognition of government as a business, but recognize the value of open data
- Geospatial data/technology as "social capital"

7) **What other insights or advice can you share regarding the growth and sustainability of large, municipal GIS enterprises?**

- Perhaps wait another quarter and migrate to ArcGIS Pro, 64bit, 2D/3D, virtualized architecture
- Leverage more home-grown data via more robust, device agnostic analytics, apps and services

LOJIC Strategy Innovation Interview with John Antenucci

October 29, 2014

1) **What technological, business and societal trends will have significant impact on the direction and use of GIS in the next three to five years? How can established municipal GIS partnerships such as LOJIC best keep pace with these changes?**
    - Foreign gov'ts, especially in Europe, are moving away from Esri toward more open source solutions; away from very expensive Oracle toward more MySQL
    - Esri's presence is still strong, but due to gov't recessions, more are leveraging and embracing open source tools, ie, MassGIS public access is all open source
    - Esri is the preferred data capture/maintenance/analysis tool; browse/query/view users use open source
    - Not a great fan of OGC, but they've had successes
    - Expectations are great; track slow/steady growth in local users versus explosion of those who "come in contact with" geo-date…need to change this
    - Create a GIS platform that uses much better local data and ingests others, ie Google, Bing, etc
    - Make all sources equally available, interchangeable and most will choose the most current and reliable data
    - Allow users to select data sources based on the situation; flood the market with easy-to-use apps and maps
    - Integrating GIS with 3D display and printing is next hot thing, very expensive but coming fast

2) **Will cloud-based data storage and application software services become the norm for municipal GIS entities that have significant server architecture and concerns about data integrity or security?**
    - Cloud: time-sharing is back!
    - Strong potential for reducing overhead costs, maintain security, redundancy/recovery
    - Compare current capital/operating investment against cloud potential
    - Keep confidential/sensitive data internal, all other in the cloud
    - Solutions vary from storage-only to storage and mechanical support
    - Cloud services are growing more reliable and secure, can create other support issues

3) **How do you see the future relationship between municipal GIS and the large commercial mapping providers (i.e. Google Maps)? How do we reconcile the local need for accuracy, currency and detail for mission-critical applications with the mass market for easily accessible general information?**
    - Allow users to decide the source data/services most appropriate for their need/situation

- Acknowledge different users: Public vs Business vs Agency users; their needs/expectations vary
- Explore other open or licensed base map data, ie Pictometry photogrammetric grade with control and flightlines

4) **Esri's current web-GIS technology seems to encourage independence and innovation within user organizations when it comes to applications and user interfaces. How do you see this affecting the ability to maintain data and applications standards and how might this impact the operations of a municipal GIS consortium?**
    - Look to OGC as starting source for open standards, there are others and much development occurring in the open source GIS arena
    - Europe seems to have dodged Esri's ArcGIS Online due to subscription/credit uncertainty
    - Esri may not be the most viable cloud solution
    - Given what other partners are paying for AGOL, explore consolidation of subscriptions/services into LOJIC enterprise
    - Use LOJIC brand and reputation for good data, add portal capabilities and ability to accept/use data from outside sources
    - LOJIC could become geo-data service provider, even for services from Google, Bing, Pictometry, etc

5) **What are the most impressive recent innovative practices in technology, governance and/or funding you have seen related to GIS?**
    - The GIS entities around the U.S. that have adopted LOJIC's interagency partnership and funding model seem more stable, sustainable, have endured and succeeded
    - Likely some tweaks to LOJIC governance and cost shares, but "don't fix what's not broken"
    - Finding must come from citizens one form or another, whether in the form of operational budget allocations, transaction fees, or other means

6) **There is a mounting push for open/free data. How do you balance providing free data with the locally incurred costs to collect, create, maintain and host geospatial data? What is the business case for making locally maintained geospatial data open and freely accessible?**
    - Since LOJIC and most other GIS are publicly funded through taxes and rates, public expects GIS resources to be open
    - Revenue generated through data and services "sales" is a small fraction of overall funding
    - Reality of GIS ROI is better service toward gov't mission and high value of citizen/business use

- There are large data consumers and customers for customized products/services who will pay for analysis, specialized subscription services, tiered access to combined data; these should be explored via probing local “markets”
- LOJIC should dramatically increase its visibility, consumption and brand as THE geo-portal for the region

7) **What other insights or advice can you share regarding the growth and sustainability of large, municipal GIS enterprises?**
    - Acknowledge that a big part of LOJIC success stems from longevity of staff and their “ownership” in building/maintaining the data and system and long-time support of partners
    - Commit to some form of advance succession planning as senior staff retire
    - Need for heavy investment in staff and user training and ownership
    - Really few new problems GIS is solving; different tools, more complex code and heavy integration in critical business operations…it’s harder now
    - LOJIC goal should be more internal and external market penetration and more open resources

LOJIC Strategy Innovation Discovery Brief

Appendix 5

Best GIS Practices Consultant Scope of Work

LOJIC Strategy Innovation Timeline

SECTION 3. SCOPE OF SERVICES

3.1 Areas of Specialized Services

MSD seeks Proposals from Respondents that have expertise in the provision of GIS planning and consulting services. Respondents must be able to demonstrate that they have the requisite skills and experience and that they currently have and will continue to have the resources and capabilities to perform all the requested services.

Objectives of the analysis performed by the consultant will be to:

1) Assess and summarize best innovative practices in governance, financing, technology, staffing and technical support for a number of representative multi-jurisdictional GIS partnerships across the country and compare/contrast with current LOJIC operations.
2) Identify options and recommendations for innovative sustainable governance and financing for LOJIC and each participant agency to fund, generate revenue or otherwise offset payment towards annual LOJIC expenses and assess each option for applicability across LOJIC user agencies. Analysis will include an evaluation of various models for user licenses, service level agreements and associated fees.
3) Identify and assess new and innovative opportunities and sources for developing and marketing LOJIC data and services.
4) Identify innovative trends in information technology, data dissemination policies and business practices most likely to impact municipal GIS in the short/long term and provide recommendations for how LOJIC might best position itself to leverage these trends to the advantage of its partners and the community.

Basis for analysis and recommendations:

The content of the deliverables will be developed based on 1) the relevant experience of the project team members; 2) knowledge of research, surveys, studies, and reports relevant to the deliverables; 3) past and on-going work with LOJIC and other multi-jurisdictional, multi-participant IT and GIS projects; 4) interviews and profiling of selected multi-jurisdictional, multi-participant IT and GIS projects, as well as other industry experts; and 5) interaction between the consultant, LOJIC staff and users in the formulation and development of the content for each of the deliverables. The project team will maximize its interactions and evaluations of the advantages/disadvantages of various approaches and techniques within the context of the unique features of LOJIC, its history and future direction.

Background/supporting information to be provided by LOJIC and partner agencies:

Relevant memos, studies, reports, plans, etc
Current partner cost-sharing allocation model
Current LOJIC service and product pricing models and or schedules
Current partnership agreement (sample)

Three-to-five year O&M and capital expense history
Three-to-five year O&M and capital expense forecast
Three-to-five year non-partner revenue, by type and source
User survey results (if available)
System usage data
High-level operational and capital budgets for each LOJIC participant
Various relevant fee schedules (e.g., permits, licenses, user) to be discussed
Access to LOJIC management, staff and relevant users

Deliverables by the consultant resulting from the analysis will include:
Best Innovative Practices Profile Report: a written report and consultant presentation to the LOJIC Strategy Innovation Team summarizing governance, financing and operations of a representative sample of successful multi-jurisdictional GIS partnerships from around the United States. The report should provide a high-level summary of the profiled site, provide key contacts for potential follow-up interviews, highlighted similarities and differences among the profiled sites and any distinctive or innovative methods of governance and financing that have potential applications for LOJIC. The report should describe the overall status and viability of municipal and/or regional GIS partnerships/consortia across the country and highlight similarities and differences in governance structure within those GIS entities with that of LOJIC.

Governance and Funding Options Report: a written report and consultant presentation to the LOJIC Strategy Innovation Team summarizing the advantages, disadvantages and applicability to local participants for ongoing sustainability of the LOJIC partnership. The report should compare and contrast various options for innovative and/or expanded services sufficient to ensure future operations, maintenance and capital necessary to sustain LOJIC and consider options for shared partner funding, user licenses for public/private subscribers, service level agreements and product/services fees. The report should also address the following questions:

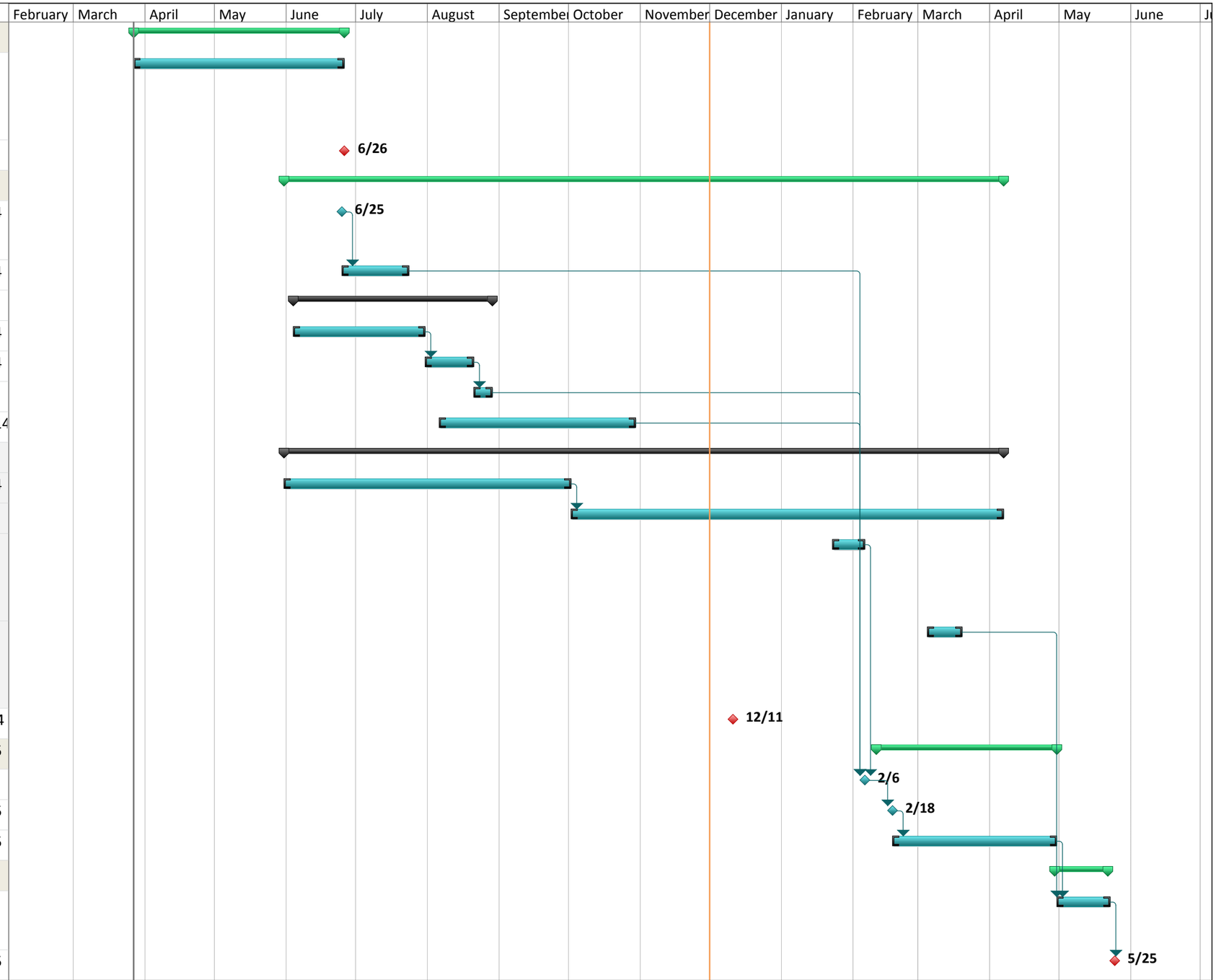
1) Is the LOJIC funding structure typical of other municipal GIS partnerships?
2) Are shared funding allocations based on equal share, data/resource usage, service level agreements or other methods?
3) Is the LOJIC staffing structure typical of other municipal GIS partnerships?
4) Who acts as the hub/gatekeeper for core data management and technical support services?
5) Do other GIS consortiums offer application development services?
6) How do other consortiums generate revenue to offset costs via data subscriptions, application subscriptions, contracted development services, hosting services, or other means?

7) What are the advantages and disadvantages of, and viable alternatives to, regular acquisitions of multi-county orthoimagery, LiDAR and photogrammetrically compiled planimetric/topographic mapping?
8) What are the advantages, disadvantages and potential risks of utilizing cloud computing resources for data storage, web-based GIS applications?
9) What are the core/critical and ancillary services provided by other GIS partnerships?
10) Are other GIS partnerships dealing with data dissemination through sales, subscription services, open portals or other means?

Scheduling and information requirements:

The consultant will meet with LOJIC management and staff within five (5) days after notice to proceed to collect relevant information and to obtain an update on the current issues and topics associated with the financing and use of LOJIC by the partners and others. The consultant will meet with LOJIC management within thirty (30) days of notice to proceed to review progress and acquire additional information that may be required. The consultant will complete and submit all reports, presentations and other deliverables digitally to LOJIC management within sixty (60) days of notice to proceed, and will make one or more of its executive consultants available for presentations of its findings and recommendations to the LOJIC Policy Board

ID	Task Name	Duration	Start	Finish
1	**STAGING PHASE**	**65 days**	**Thu 3/27/14**	**Thu 6/26/14**
2	Team Formation, Organization and Chartering	65 days	Thu 3/27/14	Thu 6/26/14
3	**LOJIC POLICY BOARD MTG.**	0 days	Thu 6/26/14	Thu 6/26/14
4	**EXPLORING PHASE**	221 days	Sat 5/31/14	Mon 4/6/15
5	LOJIC History & Self-Assessment	0 days	Wed 6/25/14	Wed 6/25/14
6	Partner Self-Assessments	21 days	Wed 6/25/14	Wed 7/23/14
7	LOJIC User Survey	62 days	Wed 6/4/14	Thu 8/28/14
8	Prep	41 days	Wed 6/4/14	Wed 7/30/14
9	Distribution	15 days	Thu 7/31/14	Wed 8/20/14
10	Compilation	6 days	Thu 8/21/14	Thu 8/28/14
11	Interviews	61 days	Wed 8/6/14	Wed 10/29/14
12	Consulting	221 days	Sat 5/31/14	Mon 4/6/15
13	RFP	90 days	Sat 5/31/14	Wed 10/1/14
14	Consulting Work	133 days	Thu 10/2/14	Mon 4/6/15
15	Best Innovative Practices Report (Draft thru Final)	10 days	Fri 1/23/15	Thu 2/5/15
16	Governance and Funding Report (Draft thru Final)	11 days	Thu 3/5/15	Thu 3/19/15
17	**DISCOVERY BRIEF**	0 days	Thu 12/11/14	Thu 12/11/14
18	**CREATING PHASE**	56 days	Wed 2/11/15	Wed 4/29/15
19	Brainstorming	0 days	Fri 2/6/15	Fri 2/6/15
20	Ranking/Prioritizing	0 days	Wed 2/18/15	Wed 2/18/15
21	Investigation of Initiatives	51 days	Wed 2/18/15	Wed 4/29/15
22	**MAPPING PHASE**	17 days	Wed 4/29/15	Thu 5/21/15
23	Compile Action Items and Recommendations	17 days	Thu 4/30/15	Fri 5/22/15
24	**FINAL RECOMMENDATIONS**	0 days	Mon 5/25/15	Mon 5/25/15



LOJIC STRATEGY INNOVATION TEAM TIMELINE
Date: Mon 12/1/14

Split | Milestone | Summary | Stage Summary | Task

LOJIC Strategy Innovation Discovery Brief

Appendix 6

Discovery Brief Presention

LOJIC STRATEGY INNOVATION
DISCOVERY BRIEF

December 11, 2014

LOJIC STRATEGY INNOVATION TEAM

- **Chartered by LOJIC Policy Board in June 2014.**
- **Tasked with evaluating the current status of, and future opportunities for LOJIC, with consideration given to governance, funding, technology and staffing.**
- **Will identify and investigate prospects for LOJIC to enhance and/or expand the provision of data, applications and other geospatial services.**

LOJIC STRATEGY INNOVATION TEAM

Goals:

- ✓ Identify new opportunities for developing/marketing LOJIC data and services.
- ✓ Identify new opportunities for developing new internal LOJIC applications.
- ✓ Identify sustainable organizational structure, governance, and funding options for LOJIC.

STRATEGY INNOVATION

Methodology:

Discovery Phase

- Assesses the current state of LOJIC, the current state and trends associated with GIS and Information Technology in general, as well as trends in municipal needs.

Creating Phase

- Uses the Discovery Phase as "food for thought".
- Identifies and develops innovative concepts that will shape LOJIC moving forward.

Mapping Phase

- Takes ideas and recommendations assembled during the creating phase and develops them into final recommendations and implementable action items.

THE DISCOVERY BRIEF

The Discovery Brief is not…

… intended to present recommendations or jump to conclusions about the final deliverables.

The Discovery Brief is…

… intended to offer a "State of the Consortium" point of view to the Policy Board so that the eventual recommendations will have proper context.

THE TOOLS FOR EXAMINING LOJIC

DISCOVERY PHASE TOOLS

1) Self-Assessments
2) LOJIC User Surveys
3) Interviews
4) Consulting Assistance

DISCOVERY PHASE TOOLS

1) Self-Assessments:

- In-depth review of the use of LOJIC and GIS by partner agencies as well as LOJIC itself.
- Intended to put team members on an even playing field regarding understanding of LOJIC and how it is being used by partner agencies.

DISCOVERY PHASE TOOLS

2) LOJIC User Surveys:

- Intended to provide feedback on what LOJIC users want, need and expect.
- Focused on both Internal and External LOJIC users to provide their different perspectives.

DISCOVERY PHASE TOOLS

3) Interviews:

Intended to provide a cross-section of "points of view" from forward-thinking individuals associated with the GIS industry as well as municipal information needs.

DISCOVERY PHASE TOOLS

4) Consulting Assistance:

Intended to provide information gathering and recommendations for parts of the innovation effort that are beyond the LOJIC S.I. Team's resources and capabilities.

- ✓ Assessment of Municipal GIS across the U.S.
- ✓ Assessment of GIS and Information Technology trends.

SELF-ASSESSMENTS

MSD Metropolitan Sewer District

LOJIC Louisville/Jefferson County Information Consortium

Commonwealth of Kentucky

Louisville Jefferson County Metro

Louisville Water since 1854

SELF-ASSESSMENTS

- Manages all base GIS data, metadata, desktop and server software, core applications, processes, & web services for the partnership.
- Supports 125 desktop users, 45 ftp users, 6 external agencies and countless public web application users.
- Consists of veteran, professional GIS staff, organized into teams by specialization (data, applications, customer support).
- Highly collaborative and work very well as a team.

SELF-ASSESSMENTS

CHALLENGES

- Lack of dedicated network administrator has impacted response and performance.
- Lack of succession planning to replace retiring senior staff.
- Little time for needed research/development of new technologies.
- Difficult to hire and retain staff in a competitive Information Technology job market.

SELF-ASSESSMENTS

MSD Metropolitan Sewer District

- Multifaceted use of LOJIC and GIS
- LOJIC base and key partner components such as street centerline, site addresses and parcels are essential to MSD's operations
- Commitment to LOJIC and greater integration of GIS in operations are objectives defined in MSD Strategic Business Plan.

SELF-ASSESSMENTS

MSD Metropolitan Sewer District

CHALLENGES

- Dependent on LOJIC staff for GIS development assistance.
- Lack of emphasis on training and improving skill sets.
- No succession planning for retiring expertise.

SELF-ASSESSMENTS

- Multifaceted use of LOJIC and GIS
- LOJIC base and key partner components such as street centerline, site addresses and parcels are essential to LWC's operations
- GIS capabilities are delivered enterprise-wide and part of overall information technology strategic plan.
- Does not depend on LOJIC staff for GIS development assistance.

SELF-ASSESSMENTS

CHALLENGES

- Would benefit from a more regional LOJIC focus due to service area. The absence of data in some areas causes problems.
- Single GIS Developer must both "build and support" applications, which puts a strain on resources as systems expand.
- Difficult to hire and retain development staff in a competitive I.T. job market.

SELF-ASSESSMENTS

- Focused use of GIS for cadastral mapping and management, real estate analysis and office workflow support.
- LOJIC base and key partner components such as street centerline and site addresses are essential to PVA's operations.
- Separately licenses Pictometry oblique imagery, a perceived valuable resource for some other LOJIC partners.

SELF-ASSESSMENTS

CHALLENGES

- Ability to maintain GIS capabilities for the benefit of external customers is linked to subscription fees for services.
- Depends on LOJIC staff for GIS development assistance.
- Difficult to hire and retain staff in a competitive Information technology job market.

SELF-ASSESSMENTS

- Most diverse use of LOJIC and GIS with room to grow (Multiple departments, each with individual focus).

LOUISVILLE FIRE DEPT. (LFD)
LOUISVILLE METRO POLICE (LMPD)
EMERGENCY MEDICAL (EMS)
COMMUNITY SERVICES
PUBLIC HEALTH AND WELLNESS
METRO TECHNOLOGY SERVICES
MAYOR'S OFFICE
PARKS
PUBLIC WORKS & ASSETS
EMA/METROSAFE
PLANNING AND DESIGN
AIR POLLUTION CONTROL
METROCALL 311

SELF-ASSESSMENTS

- LOJIC base and Metro maintained, core data components such as street centerline and site addresses are essential to critical Metro services.
- Metro's business relationship with LOJIC is managed by Metro Technology Services (MTS) however MTS does not manage GIS for the enterprise.

SELF-ASSESSMENTS

CHALLENGES

- Dependent on LOJIC staff for GIS development advice and/or assistance.
- GIS capabilities have not been centrally managed or coordinated, and have not been part of overall information technology strategic plan.
- Lack of power users for ad hoc use, emergency response and spatial analysis.

SELF-ASSESSMENTS

PARTNERS AS A GROUP

- DIVERSE MISSIONS.
- VARIED LEVELS OF GIS ORGANIZATION AND RESOURCES.
- VARIED SUPPORT NEEDS FROM LOJIC.
- SIMILAR BUDGET AND PERSONNEL ISSUES. (Hiring, Training and Retention)
- SIMILAR CORE DATA NEEDS.

WHAT DO THE USERS SAY?

INTERNAL SURVEY

USERS

- 72% of our users use LOJIC once each week or more.
- There is a wide diversity of duties and functions among users.
- High number of Licensees and *"other"* respondents emphasizes need for support and connection outside the LOJIC Partner agencies.

INTERNAL SURVEY

USERS

- LOJIC has been successful at targeting people who really need to use ArcGIS Software (The power users).
- LOJIC should examine users who only access it a few times each year to see if they need other tools.
- Need to improve interaction with Metadata thus making the data easier to get to.

INTERNAL SURVEY

DATA

- Core data is being heavily used (Plan/Topo, Aerial Photography and Parcels).
- Data available on LOJIC is viewed as robust and valuable.

TOOLS

- Apps and Tools are fairly well utilized but many people indicate they may need more training.

INTERNAL SURVEY

TRAINING AND COMMUNICATION

- Need to improve connecting LOJIC users to each other. (meetings, newsletters, network connectivity, etc.).
- Modeling/Programming and Analysis need is greater than thought and many users want to deepen their skills in these areas.
- 80% like "in class" or "self-paced" training.

INTERNAL SURVEY

TRAINING AND COMMUNICATION

- Users expressed that "Lack of Time" is a continuing barrier to obtaining training, broadening skills and maximizing the use of LOJIC.
- Most people prefer Group Email as a means of communication from LOJIC but it is also important to make personal connections so users are more comfortable asking for assistance.

EXTERNAL SURVEY

- Responses were heavy on personal research, especially pertaining to real estate & development.
- A majority of responses cited the use of property data and zoning information.
- A majority of responses emphasized the importance of data query & printing.

EXTERNAL SURVEY

- External users have little interaction with staff. They use the apps independently and generally seem quite happy with how they work.
- Over a dozen applications were listed as being accessed by external users. Users expressed a desire for all data to be wrapped into a single application.
- The top responses in user needs cited enhanced printing, more detailed PVA data, and more freely available data overall.

EXTERNAL SURVEY

- A majority of respondents cited being pleased with the ease of use of the available applications & tools
- Responses were widely scattered regarding preferred communication methods.
- A majority of responses mentioned a desire for all data to be freely available

WHAT DO THE EXPERTS SAY?

INTERVIEWS

- Local government needs GIS to do it's work.
  - ✓ Get past cost and focus on value
  - ✓ What are we not doing with LOJIC that we should? (Missed Opportunities)
- Public's expectation is for open data (csv, shp, KML), but must acknowledge need for secure/sensitive data and applications.

LOJIC S.I. DISCOVERY BRIEF

INTERVIEWS

- Branding and greater visibility is needed for LOJIC to increase awareness, demand and marketability.
- Focused responsive web apps to support technology savvy community… MOBILE, MOBILE, MOBILE !!!

LOJIC S.I. DISCOVERY BRIEF

INTERVIEWS

- Continued public/agency funding in one form or another is necessary.
  - ✓ LOJIC model has been copied and has persisted.
  - ✓ Don't fix what's not broken.
  - ✓ Funding via line item budgets, transaction fees earmarked for LOJIC support should be explored.

INTERVIEWS

- Hybrid GIS of Cloud and Local. It's not either/or. Explore best business case for each.
  - ✓ Understand and value the difference between LOJIC and openly accessible web maps such as Google.
  - ✓ Local GIS data is recognized and valued as authoritative and most current.
- Explore fees for services and analysis from local data.

PUTTING THE PIECES TOGETHER

DISCOVERY CONCLUSIONS

- LOJIC is a valuable, widely used resource and is perceived as a successful, productive partnership.
- While continuing to function and grow, LOJIC has lacked active and engaged technical and administrative bodies.
- LOJIC organization and funding landscapes in recent years have caused stagnation in relationships across LOJIC user agencies.

DISCOVERY CONCLUSIONS

- For most of its history, LOJIC has had an inward focus on partner needs. In recent years, external users have been demanding more attention and more data.
- There appears to be significant, latent demand for higher-level use of LOJIC and GIS.
- User agencies have much untapped potential, especially across Metro departments.

DISCOVERY CONCLUSIONS

- The future of LOJIC as a municipal and community resource will likely hinge on finding ways to tap into and leverage ever changing societal expectations and shifts in technology.

WHERE DO WE GO FROM HERE?

NEXT STEPS

- ✓ **Consultant review of LOJIC and the national, municipal GIS landscape is underway.**
- ✓ **Best Innovative GIS Practices Report for S.I. Team (Jan. 2015)**
- ✓ **Creating Phase (Feb.-Apr. 2015)**
  - Brainstorming
  - Ranking/Prioritizing
  - Investigating
- ✓ **Governance and Funding Report for S.I. Team (Mar. 2015)**
- ✓ **Final LOJIC S.I. Recommendations (May 2015)**

QUESTIONS