# STATUS OF LOJIC OPERATIONS AND USER COMMUNITY

## Innovative GIS Best Practices Project for the Louisville/Jefferson County Information Consortium

**Prepared under contract with the Louisville and Jefferson County Metropolitan Sewer District**

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# SECTION 1: INTRODUCTION AND PROJECT BACKGROUND

## 1.1 PROJECT BACKGROUND

This Innovative GIS Best Practices project is part of a larger Strategy Innovation effort launched in March, 2014. The Strategy Innovation effort is being guided by a team that includes LOJIC staff and representatives of its four partner organizations, Louisville Metro Government (Louisville Metro), Louisville and Jefferson County Metropolitan Sewer District (MSD), the Louisville Water Company (LWC), and the Jefferson County Property Valuation Administrator (PVA) and has the following stated purpose:

> The team will evaluate the current status of, and future opportunities for, LOJIC with consideration given to governance, funding, technology and staffing. The team will also identify and investigate prospects for LOJIC to enhance and/or expand the provision of data, applications and other geospatial services. The team will employ the use of consulting services to benchmark LOJIC in the national GIS landscape, and identify the best future strategy. The team will follow the general principles and structure of the book entitled *The Power of Strategy Innovation*     (see http://www.pdma.org/p/bl/et/blogaid=146) to identify opportunities.

A consultant team led by Croswell-Schulte Consultants was hired to carry out this Innovative GIS Best Practices project in coordination with and participation of the LOJIC Strategy Innovation team and management and staff in LOJIC partner organizations. The Croswell-Schulte Team includes personnel from two subcontracted companies: SRISYS, Inc. (West Chester, OH) and GeoMorphics, Inc. (Louisville, KY).

This current LOJIC assessment and planning is driven by several key factors:

- There has been no major LOJIC planning effort since the 2007 Strategic Plan. Some of the goals stated in that plan have not been accomplished and need to be reassessed.

- GIS and IT industry trends with new products and services provide opportunities for improvements in LOJIC operations and service delivery.

- Changes in the circumstances and GIS-related needs of LOJIC participant organizations and opportunities for expansion in user community and services.

- Changes to the LOJIC budget, financial allocation are being considered and new funding options are being explored which will impact LOJIC operations and services to its user community.

The members of the Strategy Innovation Team (below) also served as the project team overseeing the work of the Croswell-Schulte team:

| | |
|---|---|
| Curt Bynum<br>LOJIC Manager | Dana Spratt<br>Metro IT Service Level Manager<br>EMA/MetroSafe |
| James Bates<br>Louisville Water Company<br>Manager of Infrastructure Records | Jay Mickle<br>PVA Mapping/GIS Team Director |
| Sharon Meador<br>Metro IT Manager | Julie Buckler<br>MSD GIS Services/Records Manager |
| Debbie Lowery<br>Metro IT Project Manager | Jane Poole<br>LOJIC Customer Support Administrator |

The work of the Croswell-Schulte team will support and contribute to the Strategy Innovation effort and culminate in specific recommendations for changes and improvements in LOJIC operations and support to the user community. Croswell-Schulte will address the following main objectives:

1. Assess and summarize best innovative practices in governance, financing, technology, staffing and technical support—from other multi-organizational GIS programs.

2. Identify options and recommendations for innovative sustainable governance and financing--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. Provide recommendations for how LOJIC might best position itself to leverage these trends to the advantage of its partners and the community.

The Croswell-Schulte team is accomplishing these objectives through a work plan described in its proposal (response to MSD RFP 14-0723). The *LOJIC GIS Best Practices Project-PM Reference Guide* (11/3/2014) summarizes project tasks, organization, and deliverables. The work plan includes information gathering, evaluation, and documentation all culminating in specific recommendations in March of 2015. Key project activities and deliverables include:

- Review of background information from LOJIC and its partners including reports and data on LOJIC operations, meeting reports, financial information, technical documents, user community surveys carried out by LOJIC, and Self-Assessment reports prepared by LOJIC and each of its partner organizations and further described in this document.

- Interactive Focus Group sessions, with follow-up documentation and review, which explored a range of organizational, technical, and operational topics with representatives of each of the four partner organizations and LOJIC staff. See Appendix A for summary reports from these sessions.

- National Web-based surveys gathering information about status, structure, technology use, and best practices of existing multi-organizational GIS programs—to provide an expanded knowledge-base on ideas and lessons-learned that may be applicable to LOJIC. Survey results are included in the 2nd project deliverable, Best Practices Profile Report.

- Research and literature review (GIS program plans, surveys, comparative research, technology reviews) on GIS and IT governance, management, technical management pertinent to this project. The results of this research are included in the 2nd project deliverable, Best Practices Profile Report.

- Remote panel discussion with managers of selected multi-organizational GIS programs in the U.S. (selected organizations responding to the national survey). (Note: to be conducted in February or March. Results will be reported in a separate document).

- Preparation of the following three main project deliverables with review and comment from project participants:
  - *Status of LOJIC Operations and User Community*

    - *Best Innovative Practices Profile Report* (results from national survey and research)

    - *Recommendations on LOJIC Governance, Funding, and Operational Improvements* (this deliverable)

## 1.2 PURPOSE OF THIS DELIVERABLE

This is the first project deliverable which documents the status of LOJIC operations and the user community including LOJIC partner organizations, licensees, and external users. The main purpose of this deliverable is to set a baseline and confirm current status of LOJIC and its user community prior to submittal of recommendations in a subsequent deliverable. The following topics are covered:

- Purpose of this project and how it supports the Strategy Innovation effort

- Overview of LOJIC history

- Description of LOJIC status, organizational structure, and services

- Information gathering approach used by the Croswell-Schulte team

- Description of GIS use, status, and key GIS-related issues for LOJIC partners

- Evaluation of LOJIC and its user community using the GIS Capability Maturity Model (from the URISA GIS Management Institute)

- Key observations and potential actions for consideration

## 1.3 BRIEF DESCRIPTION AND HISTORY OF LOJIC

The Louisville/Jefferson County Information Consortium (LOJIC) is a multi-agency program with a mission to build and maintain a comprehensive Geographic Information System (GIS) to serve all of Louisville Metro Government, Kentucky and provide GIS data and support services to users in Oldham and Bullitt Counties. MSD serves as the LOJIC "project management agency" on behalf of the following four partner organizations which share the cost and effort involved in the full development and successful operation of LOJIC: Louisville Metro Government:

- Louisville Water Company (LWC)

- Jefferson County Property Valuation Administrator (PVA)

- Louisville and Jefferson County Metropolitan Sewer District (MSD)

LOJIC has its roots in a 1985 GIS feasibility and planning project initiated by MSD and carried out by the Frankfort-based consulting company PlanGraphics, Inc. This consulting project included information gathering from a large number of organizations in Jefferson County including all current partner organizations (Note: included the then separate City of Louisville and Jefferson County). As a result of the feasibility and planning study, recommendations were prepared and approved for full GIS development. With the pressing need for mapping to support consolidated stormwater management authority and sanitary sewer expansion in suburban Jefferson County, MSD decided to take the lead in the initial GIS implementation, originally named the Community Mapping/Data Management System (CM/DMS), and solicit formal participation from other public agencies and utilities as early as possible. Formal agreements between the old City of Louisville

and Jefferson County governments, PVA and MSD were executed in 1988, and with the Louisville Water Company in 1996, as full partners in the development of the shared community GIS now known as LOJIC. Representatives from all partner agencies were actively involved in the hardware/software procurement process, system installation, data conversion, user training, applications development and myriad technical issues related to LOJIC implementation, growth and maintenance.

In addition to the four main partners, LOJIC serves a larger community of users in Jefferson County. This user community includes licensees (organizations that pay license fees and have access and full use rights for LOJIC data) and "external users". Current Licensees include:

- Buechel Fire Protection District
- Bullitt County
- Center for Neighborhoods
- Courier Journal
- FBI
- Jefferson County Public Schools
- City of Jeffersontown

- Kentuckiana Regional Planning and Development Agency (KIPDA)
- Louisville Metro Housing Authority
- Middletown Fire Protection District
- Louisville Gas and Electric

- Oldham County
- Seven Counties Services
- Transit Authority of River City (TARC)
- University of Louisville
- US Army Corps of Engineers-Louisville District

External users include a wide range of organizations and individuals who access LOJIC online GIS applications, custom map products, and data downloads such as, engineering and environmental consulting firms, real estate developers, homeowner/neighborhood associations, local governments, non-profit organizations, educational institutions, GIS services companies, and others. Many of these external users regularly access LOJIC services and others do so on a more sporadic basis.

LOJIC's purpose and operational approach is summarized in its Mission, Values, and Vision statements:

**Our Mission...**

To build, maintain and proactively support a comprehensive Enterprise GIS that promotes information sharing and the effective use of geospatial technology for the benefit of our partners, our customers and our community.

**Our Values...**

*Partnership:* We will keep the needs, best interests and success of our partners at the forefront of our actions.

*Collaboration:* We will seek the cooperation and involvement of our user community toward the most effective applications of geospatial technology.

*Stewardship:* We will responsibly and securely maintain and promote our community's significant investment in geospatial resources.

*Excellence:* We will maintain proficiency in technical skills and provide innovative geospatial technology solutions.

*Service:* We will provide responsive, knowledgeable, effective support to meet our community's needs for geospatial resources.

*Professionalism:* We will adhere to the highest professional and ethical standards according to the GIS Code of Ethics.

**Our Vision...**

To be the premier provider of geospatial data and application services throughout the Louisville Metro region in a self-sustained, cost-effective and highly customer-focused manner.

To provide easy and open access to all forms of geospatial information about our community to all who may need it.

Organizationally, LOJIC is administered as an office of the Information Technology Department of MSD which has defined LOJIC's role to support all partner organizations and the broader community of licensees and external users. LOJIC operations are directed by the LOJIC Manager, Curt Bynum and include the following staff positions:

- Database Administrator (1)

- Database Analyst (1) (*vacant until recently—selected candidate has accepted position and will be in place soon*)

- Applications Administrator (1)

- Web Administrator (1) (*this position handles all ArcGIS Server setup, administration and development*)

- Web Developer (1) (*revision of previous Desktop Developer position to include a Web focus*)

- Applications Analyst (1)

- Customer Support Administrator (1)

- Customer Support Specialist (1) (*currently vacant)*

The LOJIC Policy Board (previously referred to as the "Policy Committee") is comprised of senior executives from each of the four partner organizations. Original agreements establishing LOJIC describe the role of the Policy Board as follows:

> *"…to provide general oversight of the continued implementation of the LOJIC GIS. They shall meet from time to time to review the policies and practices of the Partnership but no less than quarterly, and that any further policies, procedures, and/or amendments regarding this Agreement shall be jointly acted upon by the LOJIC Partners"*

While LOJIC operates with the consensus and approval of Policy Board representatives from each partner organization, there are currently no written agreements defining the terms of partner participation in or material support for LOJIC.

## 1.4 SERVICES PROVIDED BY LOJIC

From its inception, LOJIC has embraced a strong customer service focus to provide the main partner organizations and the broader user community in Jefferson County with GIS data, applications, and support. LOJIC continues to provide users with the following key products and services:

- **Regular update and access to critical GIS base map data**. This includes planimetric mapping (buildings, physical infrastructure), elevation data and derived topographic contours, orthoimagery. New acquisition of orthoimagery and update of planimetric and topographic data has occurred on about a 3-year cycle.

- **Coordination with partners and other organizations for update and storage of a wide range of other GIS datasets.** This includes: a) Street centerlines and addresses (Louisville Metro), b) political and administrative boundaries (multiple organizations), b) parcels and real property data (PVA), c) storm and sanitary sewer data (PVA), d) drainage and flood control data (MSD in coordination with FEMA), e) water supply and distribution (LWC), f) zoning and a wide range of other thematic map layers maintained by the main partners and other organizations.

- **Administration of Esri enterprise software license**. LOJIC is the administrator of an enterprise software license agreement (ELA) negotiated with Esri. The ELA provides for broad access to server and desktop GIS software to partners and selected licensees along with specific software-related services (technical support, training credits).

- **Access to frequently needed GIS data in a variety of formats**. Selected base map and thematic data may be ordered with payment following an established fee schedule (http://www.lojic.org/main/products/pdfs/feesched.pdf). Data orders may be mailed or picked up at the LOJIC office.

- **Access to a large range of custom map products.** These are available for viewing or by downloading in PDF form and in many cases at no cost (see online catalog at http://www.lojic.org/main/products/mapcatalog.htm).

- **Licensing of LOJIC data and system access.** LOJIC maintains license agreements with the external organizations identified in 1.3. License agreements define terms governing access and use of data (provided through direct Citrix access or FTP download). Fees are in place for licensees.

- **Online, interactive applications**. These are Web-based GIS services, launched from the LOJIC Web Site, that include the LOJIC Online Map and special applications (see http://www.lojic.org/main/apps/index.htm).

- **Training services and technical support.** Training and support for partner organizations and a broader user community are offered by LOJIC. LOJIC maintains tutorial information and provides standard training seminars—including Introduction to LOJIC, ArcGIS training, and other specialized training.

- **Special projects and custom development services**. LOJIC staff assist users in partner organizations, often augmenting GIS staff in those organizations, in the design and development of new GIS data sources and applications.

- **GIS data support for Oldham County and Bullitt County**. Formal agreements with each of the counties identifies GIS data to be complied by LOJIC, GIS datasets to be provided to LOJIC by the County, and overall terms governing products and services. For Oldham County, LOJIC provides data acquired and compiled from aerial surveys (high-resolution orthoimagery, LiDAR, and planimetric/topographic data) and other selected GIS data layers (point locations of important facilities). Under the agreement, Oldham County shares GIS data it maintains with LOJIC (street centerlines, addresses, parcels, zoning, and administrative boundary layers). The agreement with Bullitt County has similar terms and also includes a license and terms for direct access (via Citrix) to data and ArcGIS software maintained by LOJIC.

Coordination and access to high-quality GIS data is a core and mission critical role for LOJIC and its users. Working with its partners, LOJIC has developed and oversees standards for GIS data content, structure, presentation, and update policies. Supporting GIS data maintenance and access are well-defined metadata standards and tools developed by LOJIC. LOJIC maintains a Web Site (www.LOJIC.org) which is the main Web portal for obtaining access to information about LOJIC and access to products and services. With this online support, LOJIC includes two staff positions with a main responsibility for customer and user support. There is an overall focus on customer service among all LOJIC management and staff.

## SECTION 2: INFORMATION GATHERING AND STATUS SUMMARY

### 2.1 REVIEW OF LOJIC AND PARTNER DOCUMENTS

Management and staff of LOJIC and partner organizations have conducted and documented targeted research, surveys, and assessment work which has provided a significant base of information for the Croswell-Schulte team. Key documents reviewed for this project are identified in Table 1.

### Table 1: Key Documents and Information Sources Reviewed
(unless otherwise noted, all documents are from 2014)

| Document | Summary |
|---|---|
| LOJIC Strategic Plan (2007) | Approved by the LOJIC Policy Board. Developed the current LOJIC Mission, Vision, and Values statements and explained goals and objectives. The Plan includes projections for new target revenues to augment partner contribution. Also called for move toward a regional GIS encompassing Jefferson County in an 11-County area (included 3 Indiana counties). |
| Open Records Product and Services Fee Schedule (2010) | Current fee schedule and process for ordering frequently used GIS products. |
| Partner Agreements (dates vary) | Past written agreements with LOJIC partner organizations establishing terms for participation in LOJIC. The agreements, which have not seen recent revision or approval, were originally prepared over 10 years ago. |
| License Agreements (dates vary) | Agreements with specific LOJIC licenses which define terms for use of LOJIC data and services. |
| LOJIC Web Site Pages and Documents | Includes content of LOJIC Web Site pages and a range of documents accessible from the LOJIC Web Site (www.lojic.org). |
| Strategy Innovation Documents | Several documents describing the structure and work of the Strategy Innovation effort including: SI Charter, Strategy Innovation Process, SI Action Items and Deliverables. |
| Self Assessment Reports by LOJIC and partner organizations | Reports prepared by LOJIC and each partner organization (Louisville Metro, MSD, LWC, and PVA) which included the following topics: a) organization mission and profile, b) brief history of GIS use and LOJIC participation, c) description of user community and GIS applications, d) technical overview and GIS competencies, e) current and planned GIS-related projects, f) role played by LOJIC and value of LOJIC services, g) GIS-related needs and ideas for future GIS database and application implementation. |
| Minutes from Strategy Innovation Team Meetings | Summary reports providing information on status and accomplishments of team activities and observations about LOJIC operations and services. |
| Report on revenue from LOJIC product and service fees | Summary of annual revenue from fee payments for LOJIC data and custom products (not including license fees) from the 2001-02 through the 2013-14 fiscal years. While revenues have fluctuated during this period, average receipts since the 2006-07 fiscal year have declined significantly. |
| Metro GIS User Survey Results | Results of a survey conducted by Louisville Metro gathering information from all internal departments and offices about length and status of GIS use, GIS software and application access, training services used, frequency of GIS application access, use of services and data from LOJIC, and other questions about GIS status. |
| LOJIC Financial Spreadsheets | Two documents which provide a summary and details of budget operational and capital expenses and revenues. Show annual historical figures for Fiscal Years 2006 to 2014, details for FY 2015, and projections for fiscal years 2016 to 2018. This includes data on LOJIC partner reimbursements. This report shows that actual annual expenditures have been generally consistent over this period but partner reimbursements from Louisville Metro, LWC, and PVA were reduced significantly after FY2009. |

| Document | Summary |
|---|---|
| LOJIC User Survey Reports | Summary reports on the results of Web-based surveys which gathered information from a large sample of users of LOJIC data, custom products, online tools, and support services. Two surveys were conducted: a) Internal Users (LOJIC partner organizations and licensees) and b) External Users (organizations and people using LOJIC products and services). The surveys delivered data from responses to a broad set of questions on specific LOJIC products and services used, data and application needs, observations about the approach and quality of LOJIC's delivery of services and user support, and suggestions on improvements. |
| Strategy Innovation Team Interview Notes | Notes from interviews conducted by the LOJIC Strategy Innovation Team with influential local individuals and several key long-term national and international GIS industry leaders. SI Team members used a prepared script which posed specific questions about GIS and IT trends, LOJIC direction, and ideas on improvements to LOJIC products and services. Interviewees include:<br>  - Michael Schnuerle of YourMapper and the Civic Data Alliance<br>  - James Fee, URS Corporation Spatial IT Director<br>  - Ted Smith, Chief Metro Louisville Economic Growth and Innovation<br>  - Jack Dangermond, President, Esri<br>  - John Antenucci, President, PlanGraphics Inc. |
| MSD GIS Staff Development Plan | A 2014 plan prepared by MSD personnel in collaboration with Esri which reviews and summarizes MSD GIS goals, addresses GIS staff competencies, defines a staff development process, and describes options and recommendations for GIS training. |
| Metro GIS Executive Summary-Findings and Recommendations for Louisville Metro's Geographic Information System infrastructure (2013) | Results of an internal project chartered by Beth Niblock (former Louisville Metro CIO) and Theresa Reno-Weber, Chief of the Office of Performance Improvement (OPI) in 2013. The project reviewed past and current GIS use by Louisville Metro departments and offices, evaluation of GIS management and organizational structure, and recommendations for future GIS governance with a call to establish a well-managed enterprise GIS program, prepare a GIS strategic plan, and improve practices for improvement coordination of GIS resources and users. |
| Louisville Water Company (LWC) policies and procedures for information dissemination | Includes official documents defining requirements and policies that guide access and distribution of infrastructure information (including GIS data and products) including 1) Dissemination and Sharing of Infrastructure Records and Spatial Data (2008 Document No.: PR-1005.04), 2) Dissemination and Sharing of Infrastructure Records and Spatial Data (2008 Document No. WI 326.GIS01). These documents define the LWC requirements for responding to requests and access to GIS data and services. This allows for access to LWC GIS data for LOJIC partner organizations and some other parties and restrictions on distribution—including no public Web-based access to water distribution CGIS data. |

## 2.2 FOCUS GROUP SESSIONS AND FOLLOW-UP INFORMATION GATHERING

The Croswell-Schulte Team conducted interactive Focus Group Sessions with staff from each LOJIC partner organization, LOJIC staff, and LOJIC licensees and external users:

- Metro Government, November 6

- Jefferson Co. PVA, November 6

- Louisville Water Co., November 7

- Metropolitan Sewer District, November 7

- LOJIC Staff, November 13

- Licensee/External User Session #1 and 2, November 14

Agendas for these sessions are shown below.

| Agenda for LOJIC Staff and Partner Sessions | Agenda for Licensee/External User Sessions |
|---|---|
| 1. Overview of session objectives and context<br>  - Summary of project scope, deliverables<br>  - Relationship with SI effort<br>  - Session format<br>2. Summary of Key Points from Self Assessments (moderator will summarize key points from Self Assessment and lead interactive discussion):<br>  - Status of GIS operations and use<br>  - Challenges<br>  - Applications<br>  - Opportunities<br>3. Brief Overview of GIS Technology Trends<br>4. Open Discussion on Key Issues and Questions<br>  - Organizational, Management Practices, Staffing:<br>  - System Administration:<br>  - Database Content, Administration, Access<br>  - GIS Software and Applications<br>  - Opportunities for Expansion and Financial Support<br>5. Closing Statements and Follow-up Items | 1. Overview of session objectives and context<br><br>2. Introductions: Participants introduce themselves, identify their organizations, and summarize their main uses of LOJIC data and services<br><br>3. GIS data needs and ideas for improvements<br><br>4. LOJIC Web Site and access to data, applications, products<br><br>5. LOJIC assistance and support—suggestions for improvements<br><br>6. New or enhanced LOJIC services, products, and on-line applications<br><br>7. Fees for products and services—issues of open data vs. costs for LOJIC services |

Following these sessions, the Croswell-Schulte team prepared summary notes and distributed these to attendees for review and comment. Edited notes from the sessions are included in Appendix A.

Email communications and additional meetings were held to follow-up on these sessions and get additional detail on GIS operations and use. This included a number of meetings with the LOJIC manager and SI team members and the following meetings with LOJIC partners:

- Review of MSD GIS use and applications (with Julie Buckler)

- Review of GIS applications and development history with the Louisville Water Company (James Bates)

- Louisville Metro Government meeting to explore GIS status and plans for organizational changes and internal improvements in GIS operations (Sharon Meador, Debbie Lowery)

- Meeting with MSD IT personnel (Tom Luckett, Brook Jenkins) to get information about plans for near-term upgrades, re-organization of MSD server, network configuration, and network administration

- Attendance at the Online Services and Open Data Forum (November 10) sponsored by Louisville Metro

## 2.3 STATUS OF LOJIC OPERATIONS AND SERVICES

For over 20 years, LOJIC has provided high-quality and continual services to its users (see Section 1.4).  Statistics from calendar year 2013 gives a perspective on the volume and frequency of use:
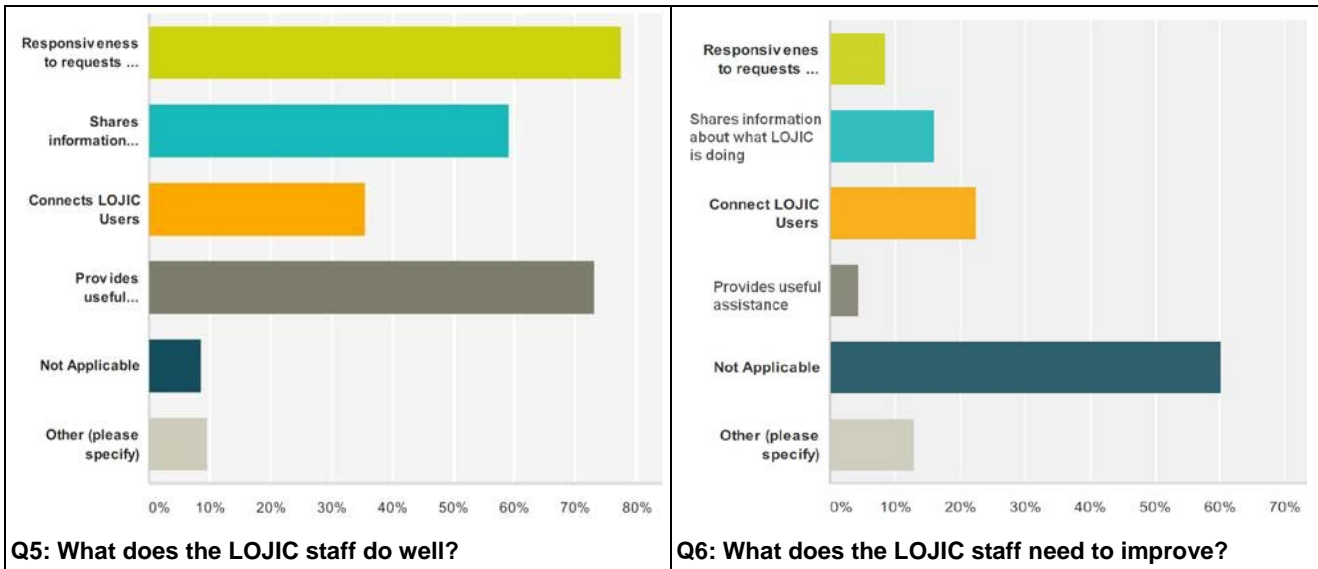
- Among LOJIC's partner organizations, there are about 120 licensed users of ArcGIS in LOJIC, MSD, PVA and Louisville Metro. In addition, LWC has about 25 licensed users of ArcGIS (from LWC servers), over 40 regular users of the LWC Web-based custom GIS
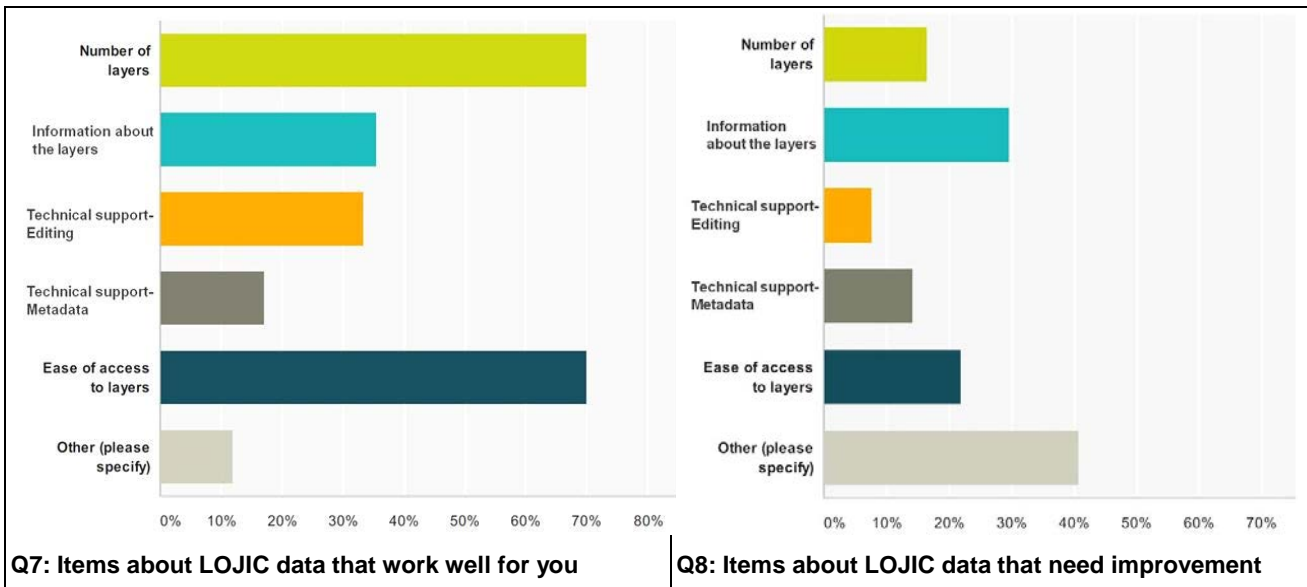
application (SPIN), and over 100 field users of MobileSPIN and MapBook mobile applications.

- The four partner organizations are identified as LOJIC "shareholders" with percentage "ownership" as follows: Louisville Metro (40%), LWC (20%), PVA (5%), and MSD (35%). While partner commitments to LOJIC are formally recognized by the LOJIC Policy Board, there are currently no active written agreements that codify the partner relationship with LOJIC.

- LOJIC's Internal (partners and licensees) User Survey shows that over 70% of respondents use LOJIC data or services at least several times per week.

- There are a total of 16 licensees (see Section 1.3) which access data and ArcGIS on LOJIC servers on a regular basis.

- On average per year (in recent years), about 400 requests for data and custom products are handled by LOJIC.

- The LOJIC Web Site and Online map services receives about 40,000 individual visitations (on average) each month. (Note: LOJIC does not gather statistics on access by individual Web users or frequency of Web applications accessed from the LOJIC Website but this "visitation" statistic indicates frequent use).

Judging from the results of the recent LOJIC user surveys and information gathered by the Croswell-Schulte Team, LOJIC products are highly valued and users are extremely satisfied with the service and support provided by LOJIC staff.   Responses from the Internal Survey (LOJIC Partners and Licensees) reflect this high level of user satisfaction (see Figure 1 below). There were similar results from External User Survey questions.

**Figure 1: Excepted Results from LOJIC Internal User Survey**



Q5: What does the LOJIC staff do well?          Q6: What does the LOJIC staff need to improve?

**Q7: Items about LOJIC data that work well for you** | **Q8: Items about LOJIC data that need improvement**

The high user satisfaction reflected in both the Internal and External User surveys was confirmed through the Croswell-Schulte Focus Group Sessions (see notes in Appendix A). Focus Group participants were asked about their opinions and perceived value of LOJIC products and services and the quality and responsiveness of LOJIC staff services and support. While Focus Group attendees voiced some ideas for improvement and enhancement, there was overwhelming approval of current of LOJIC products and services.

The positive impressions of LOJIC users (partner organizations, licensees, and external users) may be contrasted with the perspectives of LOJIC staff members expressed in LOJIC's self-assessment (Field of Today assessment conducted as part of the SI effort) and the Croswell-Schulte Focus Group Session. These sources reflect a staff that is competent, know their jobs, and carry them out with great attentiveness to quality and customer service. There are a number of concerns however that address critical issues that impact future LOJIC operations:

- Staff limitations and time constraints (due in part to existing vacancies) make it difficult for staff to think proactively; test and adopt new methods, procedures; and develop improved applications and tools to benefit users. Too much time is required to, at a minimum, maintain current operations limiting exploration and tackling of new opportunities that could benefit users.

- There is a lack of access and use of newer GIS technology and tools. There is a general feeling that LOJIC is falling behind in software upgrades and deployment of applications and data services for users (e.g., more effective use of Web services, adoption of applications for mobile platforms, use of new GIS application functionality).

- Decline in interaction and support for LOJIC users (most importantly the large user base in Louisville Metro). Staff limitations and a change in partner funding have reduced the level of direct interaction between users and LOJIC staff. Also, there has been a reduction in the level of direct interaction and communication among the LOJIC user community. The LOJIC User Group and Technical Committee provided a vehicle for communication in the past but these bodies are now inactive.

- Need for additional and more effective professional development and opportunities for advancement. This concern addresses a strong interest to maintain skills with GIS and IT

tools (as they advance) as well as opportunities for position promotions and pay increases-with a concern about pay level equity with similar IT positions within MSD.

While LOJIC has operated in a financially sound manner, there are important financial concerns that must be addressed in the near future:

- Revenues from the sale of data and custom products (not including license costs) have declined significantly in recent years—from an average annual total of about $120,000 for the 5 years ending in FY2006 to $45,000 in the last 8 years.

- Annual reimbursements from three LOJIC partners (Louisville Metro, LWC, and PVA), as a percentage of actual LOJIC costs, have decreased substantially—from about 70% in the years prior to FY 2010 to about 30% after this point. MSD has assumed a far greater percentage of LOJIC costs and now covers the cost for all LOJIC staff, most of the IT operations, and maintenance.

- Current LOJIC staff constraints and anticipated future needs (operational improvements, technology modernization, and enhanced support for LOJIC users) point to a need for additional staff and contractor services in the near future.

Based on revenue trends, as well as strong interest in "open data", we can assume that LOJIC product and service sales will remain at the current low level or possibly decrease further. Budget projections for FY2016 and beyond are adequate to maintain current staff levels and operational responsibilities, but lack significant capacity increases to take on major special projects (e.g., custom application development) or expanded user support. There is a proposal before the LOJIC Policy Board for a substantial increase (3-year ramp-up) in LOJIC Partner contributions from Louisville Metro, PVA, and LWC (restoring the pre-FY2010 levels).

The 2007 *LOJIC Strategic Plan*, approved by the Policy Board, noted that LOJIC costs were increasing at a pace greater than Partners' contribution levels. The Policy Board also recognized, in spite of a substantial use of GIS technology, there are major opportunities for expanded use and benefits from GIS and LOJIC services. The strategic plan defined the following core services:

1. Become a trusted center of knowledge and expertise about the technology and its uses across the larger Louisville Metro region.

2. Provide access to a repository of the highest quality regional geospatial data.

3. Use sound business development practices as the core in expanding the consortium and user base.

4. Provide high quality customer service in meeting the needs of end users.

5. Ensure that people know and understand how to use the technology to further their business processes.

## 2.4 LOJIC PARTNER STATUS AND KEY ISSUES

Each LOJIC Partner organization is an active user of LOJIC products and services and have active communities of GIS users. As part of LOJIC's Strategy Innovation effort, each of these partners prepared a "self assessment" which provided a summary of organizational missions, GIS use in support of its mission, and answers to key questions: a) current and future GIS-related projects, b)

GIS-related competencies, c) use and dependencies on LOJIC staff and services, and d) future needs and wants.

All of the partners make substantial use of LOJIC data, products, and services and each of these partners has internal staff with GIS skills. The LOJIC partner organizations have responsibility for update of specific GIS data layers, custom applications, and support for its users. Louisville Metro, MSD, and the PVA access GIS data, software, and applications on LOJIC servers (maintained by the MSD IT Department). The LWC maintains its own GIS servers and network (with a replication process with LOJIC servers). All partners benefit from the Esri enterprise software license agreement managed by LOJIC providing access to ArcGIS software on the desktop or via a Citrix link to LOJIC servers.

Tables 2(a), 2(b), 2(c), and 2(d) summarize information about GIS status of each partner organization based on information in the self assessments, focus group sessions, and other information reviewed by the Croswell-Schulte team.

### Table 2(a): Summary of GIS Status and Key Issues—Louisville/Jefferson County Metro Government (Metro)

Organization Mission in GIS Context: Louisville Metro's mission and a wide range of business areas involving land use planning and permitting, road and pedestrian infrastructure and transportation, public safety and emergency management, public health, social services, economic development, waste management, depend on geographic connectivity and can benefit greatly through the use of GIS technology and data. Metro Technology Services (MTS) has the lead role in GIS coordination and is the acting liaison with LOJIC. However, GIS management and use is largely decentralized at the Department level.

Summary of GIS Users and Applications: Metro has been using GIS technology since the late 1980s (when the City of Louisville and Jefferson County were separate entities). There are about 75 active users (ArcGIS via Citrix to LOJIC servers). Heaviest use of GIS is in Public Works, EMA/MetroSafe, Community Services and Revitalization, Public Health and Wellness, Louisville Fire, Louisville Metro Police (LMPD), Planning and Design, Economic Growth and Innovation, and the Air Pollution Control District (APCD). GIS is also used in Codes and Regulations, Parks, and the Louisville Zoo. Important applications for GIS include support for emergency planning and dispatch, crime analysis, public health statistics and incident mapping, transportation infrastructure management, solid waste collection, and regular ad hoc query and map display. In addition, many Metro users access the Hansen/HARP application on a regular basis. Metro departments maintain over 20 GIS data layers including street centerlines, addresses, zoning, and other layers used by Metro departments.

Geographic Scope: Metro's business needs and services extend throughout the Louisville/Jefferson County area and there are specific business needs involving areas beyond Jefferson County including regional CAD services (MetroSafe), land use planning, and solid waste management.

Use of/Dependencies on LOJIC: Most Metro users rely on LOJIC (MSD IT) server, network services and access to GIS software and applications. The LMPD does maintain its own servers, a replicated copy of the LOJIC GIS database, and makes some use of ArcGIS desktop software. All Metro GIS users regularly access base map information maintained by LOJIC. Some departments have trained staff with GIS skills, but LOJIC staff is used regularly for technical support and application development assistance.

GIS-related Projects: a) E-Gov and OpenData, b) support planned upgrade to ArcGIS 10.2, c) Capital Projects/Improvements coordination, d) Junk Notification System Enhancement, e) Metro Parks Tree Inventory, f) recommendations have been made for preparation of GIS strategic plan aimed at creation of an enterprise, centrally coordinated GIS program in Metro.

GIS Needs and Wants: a) Expanded use of GIS to support emergency response and crime analysis, b) More flexible ad hoc mapping capabilities, c) mobile applications for special event and damage assessment, d) GIS support for tree mapping and management, e) expanded use of internal ArcGIS Server Web applications and map services, f) more maps and GIS data available for the public perhaps through use of ArcGIS Online, g) better integration with GoogleMaps, h) expand use of GIS in Metro, i) increased training, j) general purpose GIS "place name" layer, k) interest in re-activating past activities for communication among LOJIC user community (e.g., now inactive User

Group),  l) access to Pictometry (license held by PVA).

GIS Challenges/Concerns: a) Lack of centralized enterprise GIS management and coordination within Metro, b) clarification of Metro's relationship with LOJIC, c) funding and resources to support expanded use of GIS, d) LOJIC metadata requirements and tools seem restrictive and sometimes inhibit creation of new data, e) cumbersome process for transfer of ArcGIS street centerline and address data to Intergraph CAD system for MetroSafe dispatch system, f) allocating resources and staff time for GIS training

## Table 2(b): Summary of GIS Status and Key Issues—Jefferson County Property Valuation Administrator (PVA)

Organization Mission in GIS Context: The PVA is an elected office which operates as a state agency under the Kentucky Revenue Cabinet. The PVA has responsibility for real and personal property assessment in Jefferson County. Geographic information and GIS technology is critical for support of the PVA's work in parcel mapping and real property assessment which involves field appraisal and office-based analysis.

Summary of GIS Users and Applications: The PVA's GIS is managed and coordinated by the GIS Department formed in 2006.  Among the total staff of 60, there are about 7 routine GIS users.  Internally, the main use of the GIS is to support maintenance of the parcel map layers and real property data as changes occur from ownership transfers, parcel splits, mergers, and subdivisions.  The GIS is also used for query and analysis of parcel data to support valuation work. The PVA makes use of a custom application (running on ArcGIS) from Smart Data Solutions for parcel data query and mapping. ArcGIS analyst has been used to generate routes for appraisers.  The PVA also uses Pictometry data and services to support its appraisal work.   In addition to internal use, there is a large external user community which includes the other LOJIC partner organizations and a wide range of public sector organizations and private companies. These external users rely heavily on parcel boundary and real property data in GIS format.  External users can do simple queries, searches, and online mapping of parcels from the LOJIC Online Map or from the PVA's Web Site.  More sophisticated searches and retrieval of real property information is provided through a subscription from the PVA (fee required).

Geographic Scope: The PVA's scope is limited to Jefferson County.

Use of/Dependencies on LOJIC: The PVA relies on LOJIC servers for GIS data and software access, Esri software licenses, technical support from LOJIC staff, and assistance in application development. ArcGIS is accessed by PVA users through the Citrix connection with LOJIC servers.

GIS-related Projects: a) Recently launched project for migration to new Computer Assisted Mass Appraisal (CAMA) software (E-Ring) which will have GIS integration capabilities, b) Field/mobile device application for field appraisers (part of the overall CAMA migration), c) put in place more frequent parcel data exchange with LOJIC, d) explore sharing of Pictometry data and service with other LOJIC partners, e) support planned upgrade to ArcGIS 10.2.

GIS Needs and Wants: a) full implementation of new CAMA system with effective GIS interface, b) GIS access by field appraisers on mobile devices, c) expand use of GIS in other PVA departments, d) automated tool, perhaps GIS-enabled to replace manual update and maintenance of property cards, e) recommend that the formerly active User Group and Technical Committee be re-activated, f) design and development of a Web-based interface for data searches, analysis, and map display customized for PVA staff.

GIS Challenges/Concerns: a) Retaining competent GIS staff and providing ongoing technical training, b) Technical problems with Citrix GIS access causing long delays or crashes, c) ongoing work to improve parcel data quality and accuracy, d) working our licensing details with LOJIC partners to allow access to Pictometry, e) make improvements to LOJIC support/helpdesk procedures.

### Table 2(c): Summary of GIS Status and Key Issues—Louisville Water Company (LWC)

Organization Mission in GIS Context: The LWC is a municipal company that provides high quality water to customers in all of Jefferson County and surrounding counties. They support about 850,000 residential and commercial customers with a network that includes over 4,100 miles of distribution mains throughout Jefferson County and parts of Oldham and Bullitt Counties. The LWC also provides wholesale water to Shelby, Spencer, and Nelson Counties. Sustaining the LWC requires geographic information and GIS technology in all business areas including management of water supply, water treatment, distribution and support functions, water system monitoring, infrastructure maintenance and management, water supply planning, customer support and account management, and public education. GIS in the LWC is coordinated and supported by a GIS Work Group (staff of 6) under LWC's Infrastructure Records Process.

Summary of GIS Users and Applications: The LWC is a long-time user of GIS technology has a mature implementation of GIS that supports users in almost all parts of the organization. The LWC GIS user community can be broadly characterized as: a) Core Power Users, b) Casual Web Users, and c) Mobile Users. Many users access GIS through a customized ArcGIS Server interface—the Spatial Pipeline Infrastructure Network (SPIN) which provides an intuitive map interface for spatial and attribute queries and map display of the distribution network. A lighter version of SPIN, called MobileSPIN, has been developed for use in multiple smart mobile devices. The Plant Drawing Management System (PDMS) provides map-based query and access to engineering drawings and documents which have been scanned, indexed, and georeferenced. GIS is accessed by field personnel (on laptops in vehicles) using an implementation of Mapbook software (T.C. Technology) which operates in connected or disconnected mode. There are 25 LWC personnel that use ArcGIS software, about 40 routine users of the custom ArcGIS Server SPIN application, 39 users of MobileSPIN, and over 100 licensed users of the MapBook field based GIS application.

Geographic Scope: The LWC service territory and area of interest covers all of Jefferson County and parts of Bullitt, Nelson, Oldham, Shelby, and Spencer Counties.

Use of/Dependencies on LOJIC: LWC has been a full partner of LOJIC since 1996 and relies heavily on base map, street centerline, parcel, and other GIS data from LOJIC. The LWC maintains its own GIS servers and networks with a replicated copy of the LOJIC GIS database. LWC has its own trained GIS staff and have the primary role for maintaining applications and supporting LWC users. LWC does use LOJIC staff for technical support when needed—usually for topics relating to the LOJIC GIS database.

GIS-related Projects: a) Implementation of new asset management—Oracle WAM with GIS interface, b) MobileSPIN application enhancement for smart devices, c) GIS integration with CC&B System (Oracle), d) MIMS support for Flushing and Cross Connection, e) Transmission Main Condition Assessment, f) support planned upgrade to ArcGIS 10.2, g) Enterprise Asset Management

GIS Needs and Wants: a) expansion of the GIS database (base map, street centerline, addresses) to cover areas outside Jefferson County, b) interest in reactivation of the now inactive GIS User Group and Technical Committee.

GIS Challenges/Concerns: a) Addressing the OneWater initiative and possible impact on IT and GIS databases and services, b) retaining and recruiting qualified GIS staff and providing necessary training to keep skills up to date, c) examine improved network connectivity to support quicker data replication with LOJIC, d) growing interest in Open Data and role that GIS may play in providing access to data—but need to keep in mind water utility data sensitivity.

### Table 2(d): Summary of GIS Status and Key Issues—MSD

Organization Mission in GIS Context: MSD's mission is to provide wastewater, drainage and flood protection services for 240,000 sewer and drainage customers. MSD maintains more than 3,000 miles of sewers and over 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. GIS in MSD is managed by the GIS Service and Records Department in the Engineering Division. The GIS Service and Records Department has 10 staff members. Sanitary sewer service is provided to customers throughout Jefferson County and the City of Crestwood in Oldham County. Storm drainage and flood control programs focus on Jefferson County but regional drainage issues drive an interest in geographic data in neighboring counties.

Summary of GIS Users and Applications: GIS development in Jefferson County, which later became LOJIC was initiated and supported by MSD beginning in the late 1980s. MSD continues to be an active LOJIC partner and is the administrative home for LOJIC staff and operations. MSD has a mature implementation of GIS that supports users in

almost all parts of the organization. MSD maintains more than 160 GIS data layers including sanitary sewer, storm sewer and drainage channels, floodplains, flood control facilities, easements, project locations, service requests, and others.  GIS is used extensively for customer call management and support, engineering planning and design, maintenance management, industrial compliance and monitoring, emergency planning and management, and other applications. Over 250 staff in MSD use GIS regularly. This includes 29 ArcGIS users and others who access GIS through browser-based custom Web applications or the HARP application (GIS integration with Hansen). MSD uses the eB engineering document management software from Bentley which is integrated with GIS.

Geographic Scope: The MSD service area covers all of Jefferson County and parts of Oldham and Bullitt Counties.

Use of/Dependencies on LOJIC: MSD relies on LOJIC servers for data and software access and is a heavy user of base map information maintained by LOJIC. While MSD has its own trained GIS staff, LOJIC personnel are used routinely for technical support and assistance in application development.

GIS-related Projects: a) Ongoing GIS metadata update, b) ArcGIS 10.2 migration and possible migration from HARP to Infor/Hansen v8.2 (with more robust GIS interface), c) Coordination of Capital Projects/Improvements, d) IOAP retention, e) Advanced Asset Management

GIS Needs and Wants: a) expansion of the GIS database (base map, street centerline, addresses) to cover areas outside Jefferson County, b) explore needs and approach for field-based GIS applications, c) examine use of ArcGIS Online or other flexible tools to allow external users (e.g., engineering consultants/contractors) to use GIS data online through Web interface

GIS Challenges/Concerns: a) Addressing the OneWater initiative and possible impact on IT  and GIS databases and services, b) documenting GIS-related workflows and procedures to capture institutional knowledge and support consistency and new employee orientation, c) requirement for more organized and extensive GIS training (MSD recently worked with Esri to prepare professional development plan.

## 2.5 LOJIC LICENSEES AND EXTERNAL USER STATUS

LOJIC offers a fee-based license for organizations that make frequent use of LOJIC GIS data. The current licensee organizations (see Section 1.3) include a range of public sector organizations, educational institutions, special service organizations, utilities, and other organizations that make regular use of geographic information and GIS technology. Licensees make use of LOJIC data for a wide range of geographic query, mapping, and analysis applications including use with their own GIS or CAD software and online LOJIC mapping tools. A number of Licensees responded to LOJIC's Internal User Survey and/or attended one of the Focus Group Sessions conducted by the Croswell-Schulte team.

Two types of licenses are used: 1) licenses for GIS data provided via FTP download or 2) through direct access to LOJIC servers via Citrix. Licensees have written agreements with LOJIC (through MSD) which define data, access, and services and fee payments. Licensees pay moderate fees which provides for access and use of LOJIC data and support services. Three of the licensees (University of Louisville, KIPDA, and the KYTC) are not assessed fees since their use is covered through existing intergovernmental agreements. A summary of license fees is presented in Table 3 below.

**Table 3: Summary of Current LOJIC Licenses with External Organizations**

| Licensees | Year Effective | Annual Fee | Comments |
|---|---|---|---|
| Citrix Access Licenses: | | | |
| City of Jeffersontown | 2013 | $5,450 | |
| Middletown Fire Protection District | 2010 | $2,000 | |
| Buechel Fire Protection District | 2011 | $2,000 | |
| Louisville Metro Housing Authority | 2010 | $5,450 | |

| Licensees | Year Effective | Annual Fee | Comments |
|---|---|---|---|
| Transit Authority of River City (TARC) | 2010 | $32,250 | Includes pass through fee for Esri SW license |
| Bullitt County | 2013 | $19,042 | Includes share of orthoimagery, planimetric/topographic mapping (PTD) fees ($13,042) and ArcGIS license for LOJIC server access |
| **FTP Data Downloads:** | | | |
| Center for Neighborhoods | 2014 | $1,000 | |
| Courier Journal | 2002 | $1,000 | |
| FBI-Louisville Office | 2002 | $1,000 | |
| Jefferson County Public Schools | 2000 | $6,530 | |
| Kentucky Indiana Regional Development Agency (KIPDA) | 2000 | N/A | Intergovernmental Agreement |
| KY Transportation Cabinet (District 5) | 2000 | N/A | Intergovernmental Agreement |
| Louisville Gas & Electric | 2001 | $72,806 | Initial Fee in 2001: $428,500. Additional $4,649 for PVA REMF. |
| Oldham County | 2012 | $12,084 | Includes share of orthoimagery, planimetric/topographic mapping (PTD) fees ($12,084) |
| Seven Counties Services | 2004 | $1,225 | |
| U.S. Army Corps of Engineers-Louisville District | 1992 | N/A | Intergovernmental Agreement |
| University of Louisville | 1998 | N/A | Intergovernmental Agreement |

Other external LOJIC users (non-licensees) include organizations and individuals that download data from LOJIC (fee-based service) or use LOJIC custom products or online Web-based tools (Online Map, Snow Status Map, etc.). Over 85% of the respondents to the LOJIC External User Survey reported use of the LOJIC Online Map application. Over a third of these Online Map users also make use of the PVA GIS site (subscription based) for parcel data query and research. The external user community is broad and diverse—over a hundred individuals and organizations that use LOJIC data, map products, or tools (see Section 1.3 for more information about this external user community). LOJIC does not gather statistics on individual Web applications access from the LOJIC Website, but judging from totals of unique visits to the site (about 40,000 per month), the Web services in general have a relatively high volume of use.

Feedback from these organizations shows a very high level of satisfaction with LOJIC products, services, and staff support. Users in these organizations use LOJIC data and GIS capabilities on a daily basis. LOJIC base map, parcel, street centerline, administrative boundary data is used most frequently.

Key issues and ideas, drawn from the External User Survey and Focus Group session, for improvements or enhancements to LOJIC data, products, and services include:

- Connect LOJIC users—enhance communication with and among members of the broad LOJIC user community. This might include a re-activated user group or e-Newsletter for better communications with LOJIC. There were a number of comments about use of social media (the top five: YouTube, Facebook, Twitter, Google+, and Instagram).

- Ideas for additional GIS data needs include: a) sidewalks and bike lanes, b) access to utility data—LWC and other utilities—including utility service data, c) recreation sites and trails, d) tree canopy, e) pending permits, f) coordinates for property corners and access to plats, g) oblique/Pictometry access, h) lot dimensions, i) pole locations, j) elevation data for buildings, k) digital elevation model data, l) ownership data, and m) direct access to traffic count data (KIPDA).

- Interest in getting full access to base map, street centerline, and parcel data outside of Jefferson County-particularly Oldham, Bullitt, Spencer, and Hardin counties.

- More information about the use of existing LOJIC applications and tools as well as enhancements to online applications and new applications (see bullet point below with initial ideas for enhancements).

- Lack of time for training.

- Access to full real property search data from the PVA in an integrated fashion with LOJIC Online mapping tools.

- More flexible access to information about GIS data (metadata)

- Possible redesign of LOJIC Web Site to improve appearance, intuitiveness, and navigation.

- Improve addressing to ensure that individual apartments can be identified (unique address with apartment number) and that vacant properties have an assigned address.

- Improve and add new features to the LOJIC Online Map. Some of the items mentioned include: a) re-design of scale thresholds for feature display, b) type in scale for zoom, better printing capability, c) one-click to show adjacent property owners for selected parcel, d) show more utility data, e) reduce size or pop-up windows, f) full integration of GoogleMaps and Google Street View, g) query to identify specific sewer treatment plant that serves a specific property or location, h) map area selection/zoom tool (draw boundary of rectangle for zoom extent, i) easy tool to select area and extract that content for pasting into document, email message, etc., j) ensure that the Online Map works with all Browsers, k) tool to interactive draw and area and have the application provide count of features inside the area (e.g., number of parcels), l) allow for searches by "development name" entry, m) add compass rose to see map display orientation.

- Suggestions to open up all GIS data for free access and use (eliminate fees). This was suggested by a number of survey respondents but many users do not have complaints about fee-based services as long as the data and tools are of high quality and well-maintained.

## SECTION 3: LOJIC OPERATIONS EVALUATION WITH GIS CAPABILITY MATURITY MODEL (CMM)

As part of the Croswell-Schulte assessment of current status, we applied the URISA GIS Capability Maturity Model (GISCMM) which is a recent tool developed by the URISA GIS Management Institute. Its primary purpose is to provide a theoretical model of a capable and mature enterprise GIS operation within a designated organization. See http://www.urisa.org/clientuploads/directory/GMI/ for more details. The GISCMM provides a scoring tool in which specific components are evaluated and assigned a score. This assessment of LOJIC and its coordination with partner organizations includes scores and comments for individual GISCMM components for the two main sections: a) **Enabling Components** (EC) which are the aspects of a GIS that are purchased, developed, acquired, or otherwise form the assets of the GIS and b) **Execution Ability** (EA) which are aspects of a GIS that relate to the process maturity of the management and staff responsible for operating a GIS.

Enabling Capability components of the GISCMM focus on the resources and cost side of GIS. The Execution Ability portion of the model relates to the benefits that the GIS can deliver for the agency or agencies that the GIS serves. This LOJIC assessment was performed by the Croswell-Schulte team with the oversight and guidance of team member Greg Babinski who is the leader of the URISA GIS Management Institute and the primary author of the GISCMM. The GISCMM assessment for LOJIC relied on information described in Section 2 including materials provided by the LOJIC SI Team (self assessments, internal and external surveys), meetings and Focus Group sessions with LOJIC staff and partner organizations, and the review of many background documents provided by LOJIC and partner organizations.

The details of the GISCMM assessment are provided in Appendix B. This assessment helps to identify current strengths and areas which may need improvement. Decisions about the importance or priority of specific improvements corresponding to GISCMM components are based on the information gathering work and assessment carried out by the SI Team and Croswell-Schulte along with the specific needs of LOJIC and its user community. These GISCMM results will be used by the Croswell-Schulte team as a basis for preparing specific recommendations for action. The results are summarized in Table 4. The explanation for the scoring for the EC and EA components, which is summarized in Table 4 and presented in detail in Appendix B, is explained below:

**Enabling Capability Components:**

- 1.00 Fully implemented
- 0.80 In progress with full resources available to achieve the capability
- 0.60 In progress but with only partial resources available to achieve the capability
- 0.40 Planned and with resources available to achieve the capability
- 0.20 Planned but with no resources available to achieve the capability
- 0.00 This desired, but is not planned
- Not Applicable (This is a non-numeric response that requires an explanation of why this component should not be considered in assessing the operation.)

**Execution Ability Components:**

- Level Five: Optimized processes
- Level Four: Managed and measured processes
- Level Three: Defined processes
- Level Two: Repeatable processes
- Level One: Ad-hoc processes

Key issues and observations that were considered in this CMM scoring are presented in Section 4. This scoring applies to LOJIC as a whole—its organizational structure, LOJIC staff and operations, and the status of GIS operations in individual partner organizations as this impacts LOJIC as a whole.

**Table 4: GIS Capability Maturity Model Assessment of LOJIC** (see Appendix B for details)

| ENABLING CAPABILITY (EC) COMPONENTS | | EXECUTION ABILITY (EA) COMPONENTS | |
|---|---|---|---|
| **EC Components** | **Score** | **EA Components** | **Score** |
| EC1.a  Framework GIS Data[1] - Geodetic Control | 1.00 | EA1.   New Client Services Evaluation and Development | Level 3 |
| EC1.b  Framework GIS Data[1] - Cadastral | 1.00 | EA2.   User Support, Help Desk, and End-User Training | Level 3 |
| EC1.c  Framework GIS Data[1] - Orthoimagery | 1.00 | EA3.   Service Delivery Tracking and Oversight | Level 3 |
| EC1.d  Framework GIS Data[1] - Elevation | 1.00 | EA4.   Service Quality Assurance | Level 3 |
| EC1.e  Framework GIS Data[1] - Hydrography | 1.00 | EA5.   Application Development or Procurement Methodology | Level 2 |
| EC1.f  Framework GIS Data[1] - Administrative Units | 1.00 | EA6.   Project Management Methodology | Level 3 |
| EC1.g  Framework GIS Data[1] - Transportation | 1.00 | EA7.   Quality Assurance and Quality Control | Level 3 |
| EC1.h  Framework GIS Data[1] - Planimetric | 1.00 | EA8.   GIS Technical  Management | Level 2 |
| EC1.i  Framework GIS Data[1] - Site Address | 1.00 | EA9.   Process Event Management | Level 2 |
| EC2.a  Framework GIS Data[1] Maintenance - Geodetic Control | 1.00 | EA10.  Contract and Supplier Management | Level 3 |
| EC2.b  Framework GIS Data[1] Maintenance - Cadastral | 1.00 | EA11.  Regional Collaboration | Level 4 |
| EC2.c  Framework GIS Data[1] Maintenance - Orthoimagery | 1.00 | EA12.  Staff Hiring and Development | Level 3 |
| EC2.d  Framework GIS Data[1] Maintenance - Elevation | 1.00 | EA13.  Operation Performance Management | Level 2 |
| EC2.e  Framework GIS Data[1] Maintenance - Hydrography | 1.00 | EA14.  Individual GIS Staff Performance Management | Level 4 |
| EC2.f  Framework GIS Data[1] Maintenance - Administrative Units | 1.00 | EA15.  Client Satisfaction Monitoring and Assurance | Level 3 |
| EC2.g  Framework GIS Data[1] Maintenance - Transportation | 1.00 | EA16.– Resource Allocation Management | Level 3 |
| EC2.h  Framework GIS Data[1] Maintenance - Planimetric | 1.00 | EA17. GIS data sharing | Level 4 |
| EC2.i  Framework GIS Data[1] Maintenance - Site Address | 1.00 | EA18. GIS Software License Sharing | Level 3 |
| EC3.  Business GIS Data[2] | .80 | EA19.  GIS data inter-operability | Level 4 |
| EC4  Business GIS Data[2] Maintenance | 1.00 | EA20. Legal  and policy affairs management | Level 2 |
| EC5.  GIS Data Coordination | 1.00 | EA21. Balancing minimal privacy with maximum data usage | Level 4 |
| EC6.  Metadata | .60 | EA22.  Service to community and profession | Level 3 |
| EC7.  Spatial Data Warehouse | .80 | | |
| EC8.  Architectural Design | .60 | | |
| EC9.  Technical Infrastructure | .60 | | |
| EC10.  Replacement Plan | .80 | | |
| EC11.  GIS Software Maintenance | 1.00 | | |
| EC12.  Data back-up and security | 1.00 | | |
| EC13. GIS Application Portfolio | .60 | | |
| EC14. GIS Application Portfolio Management | .60 | | |
| EC15. GIS Application Portfolio O&M | .60 | | |
| EC16.  Professional GIS Management | .80 | | |
| EC17.  Professional GIS Operations Staff | .80 | | |
| EC18.  GIS Staff Training, User Support, and Professional Development | .60 | | |
| EC19.  GIS Governance Structure | .60 | | |
| EC20.  GIS is Linked to Agency Strategic Goals | .60 | | |
| EC21.  GIS Budget | .60 | | |
| EC22.  GIS Funding | .60 | | |
| EC23.  GIS Financial Plan | .60 | | |

**Footnotes:**

[1]For use in the LOJIC assessment, the GISCMM uses the term "Framework Data" to refer to base map layers and other map layers of major importance to all or most LOJIC partners. Framework data is used as a spatial reference for other GIS data layers and to support mission critical needs of users.

[2]Business data (sometimes referred to as "Thematic" data) encompasses all non-Framework data that is associated with specific applications, business areas, and/or groups of users.

## SECTION 4: KEY OBSERVATIONS AND POTENTIAL ACTIONS

This Section presents initial observations about LOJIC, its partners, and external user community addressing organizational structure, management practices, finances, and operations which are the basis for possible changes. The observations and issues presented here give the SI Team and project participants the opportunity to examine possible areas for action and a basis to provide specific feedback to the Croswell-Schulte team. The tables below contain a comprehensive summary of observations and issues identified during our information gathering which were used as a basis for the GIS CMM scoring presented in Section 3. Each is assigned an "importance score" which reflects the extent to which that issue or observation should drive some change or action by the LOJIC staff and/or partner organizations.

Observations and issues are organized into the following subsections:

- Governance, Management Encompass Practices, Service Delivery: Covers organizational structure, relationships among LOJIC partners and organizational entities, management policies and practices, user support services, staffing, and improved coordination with the broad user community.

- Technical Infrastructure, Software, and Systems Administration: Encompasses all elements of the information technology infrastructure—servers, software, networks and systems administration supporting LOJIC and its GIS users.

- Current and Possible Enhanced or New Applications and Services: GIS and related applications built on GIS software and data and delivering specific products and results to users. This includes custom map products, online applications, and desktop GIS applications provided by LOJIC or developed and deployed by its partners and user community.

- GIS Data Maintenance and Access: Includes all GIS and related database content, administration, development, update operations, metadata maintenance and systems and procedures in place for database quality control, administration, user access, and distribution to users.

- LOJIC Budget and Finances: Addresses all areas of funding and financial management for LOJIC, budgeting, partner contributions, management of fees and revenue, and financial tracking and reporting.

Observations and issues for each of these topics are presented in the subsections below. In these an "importance score" (from 1 to 8) is assigned which reflects the extent to which that issue or observation should drive some change or action for LOJIC and/or partner organizations. A score of "1" means very low importance and a score of "8" indicates extremely high importance. The level of importance was determined based on the background collected during research activities and input provided by the LOJIC partners.  This scoring will be used as a basis for specific recommendations (to be included in an upcoming project deliverable).

## 4.1 GOVERNANCE, MANAGEMENT PRACTICES, AND SERVICE DELIVERY

Table 5 identifies and describes key issues and observations relating to GIS program governance.

**Table 5: Governance, Management Practices, and Service Delivery Observations**

| ID | Issue/Observation | Importance Score[1] | Explanation |
|---|---|---|---|
| GM1 | Policy Board role and support | 6 | The role of the LOJIC Policy Board (previously "policy committee") as defined in original LOJIC agreements is defined as: *"…to provide general oversight of the continued implementation of the LOJIC GIS. They shall meet from time to time to review the policies and practices of the Partnership but no less than quarterly, and that any further policies, procedures, and/or amendments regarding this Agreement shall be jointly acted upon by the LOJIC Partners"*. It may be an appropriate time to review Policy Board membership and role and procedures for communications among Policy Board members, GIS personnel in their organizations, and the LOJIC manager and staff. |
| GM2 | Lack of current written agreements for LOJIC partners | 7 | There are currently no recently written or revised agreements defining terms and commitments of LOJIC partners. It is common practice, for GIS consortia, to have up-to-date agreements clearly ratified defining terms for participation. |
| GM3 | Reactivation and possible name and role change for Technical Committee | 5 | The now inactive "Technical Committee" played a valuable role in the past—particularly to support major GIS development efforts. Re-activating this group (perhaps renaming it "Steering Committee") could provide an effective forum for partner input and support for LOJIC and be a body that provides recommendations and delivers necessary information to the LOJIC Policy Board. |
| GM4 | LOJIC user support | 8 | The current constraints on LOJIC staff time, and the current situation in which MSD has assumed costs for LOJIC staff, limits the time available for user support--routine technical support as well as work on exploring new applications or special projects. This is particularly the case for support of Louisville Metro GIS users. The ideal environment is one that allows LOJIC staff to provide additional support (at no additional cost beyond standard reimbursement level) with the objective of expanding GIS use and benefits. |
| GM5 | Staffing limitations | 7 | LOJIC staff limitations, exacerbated by current staff vacancies, have contributed to constraints on LOJIC services and user support. Time required just to support routine operations and user services does not allow time to think and act proactively and work with users to define new applications, technology tools, and services. GIS staff limitations also exist in Louisville Metro. This situation places significant obstacles for most effective use of GIS to drive real benefits for users. |
| GM6 | Improved GIS program management and coordination in Metro | 5 | As is reflected in a 2013 internal evaluation conducted by Metro Technology Services and involving the substantial Metro GIS user community), there are opportunities for expansion in GIS use and benefits and a need for creation of a more centralized and multi-departmental enterprise GIS management environment (as is the case with other LOJIC partners). This has the greatest priority for the user community in Louisville Metro but since it would create an environment for expanded use of and benefits from GIS. But it would also be a basis for improved and more effective coordination with the LOJIC staff and other partners. |
| GM7 | Expanding LOJIC user community | 5 | There is currently a broad LOJIC user community taking into account LOJIC partners, Licensees, and external users. For many years, there has been an interest in expanding the user community in Jefferson County and surrounding counties. LOJIC, with its partners should explore possible expansion in the user community (e.g., additional municipalities, special service districts, private companies, greater use by County Clerk and Sheriff's Office). |
| GM8 | IT staffing for LOJIC | 7 | The current and anticipated future organizational environment, MSD IT will have major responsibility for server and network administration, Oracle database administration, software loading and administration, user account maintenance, etc. It is important that, in addition to strong IT skills, that MSD IT has competencies in GIS software and database configuration and administration. This concern drives a need for selected MSD IT staff to have sound familiarity with GIS, GIS technical training, and perhaps support for one or more additional IT positions filled with individuals who have IT and GIS skills. |

| ID | Issue/Observation | Importance Score[1] | Explanation |
|---|---|---|---|
| GM9 | Training needs, constraints, and approached | 7 | Ongoing training for technical GIS staff and users is a critical element for effective GIS user and operations. Factors limiting effective training include costs and allocation of time for staff to participate in training activities. This concern can be addressed through the identification of training sources and approaches (e.g., instructor-led, self-paced on-line courses, Webinars, workshops, internal mentoring) and the preparation of a training plan that addresses LOJIC training offerings and needs of each partner organization. |
| GM10 | Professional involvement and certifications | 4 | An effective element for building staff competencies and morale is involvement in professional associations and professional certifications. LOJIC and partner organizations have a history of involvement with professional organizations and conference participation (URISA, Esri User conference and industry groups, KAMP) but consideration should be given to allocation of time and resources for increasing professional involvement and staff pursuit of applicable certifications such as GISP, ASPRS-Certified Mapping Scientist, Esri and other vendor certifications, and management or discipline specific certifications (PMP). |
| GM11 | LOJIC User Group Reactivation | 6 | All LOJIC partner organizations and some external organizations expressed a need for more active communication/collaboration among users. A possible need for reactivation of the LOJIC User Group has been considered. This could have positive impacts as long as it is well-organized and that meetings and other activities make efficient use of time and deliver value to participants. |
| GM12 | Brainstorm sessions focusing on solutions | 5 | Possibly as part of User Group meetings, it could be valuable to hold directed brainstorm sessions, with specific topics identified, to get input and ideas for improvements and solutions using GIS technology. |
| GM13 | Improve LOJIC "brand" and promotion | 3 | Concern has been expressed by some that LOJIC is not a well-known entity in Jefferson County outside of the current user community in partner organizations. Ideas for additional branding and promotion of LOJIC—as it may contribute to wider use of GIS data and technology may be pursued. |
| GM14 | LOJIC staff position salary grade | 7 | Concerns exist about GIS technical positions (responsibilities, pay scale) in LOJIC and partner organizations relative to IT positions with similar skills and experience requirements. MSD is carrying out a review of staff positions and salary levels. This and other sources (e.g., URISA 2014 GIS Salary Survey) should provide information that could support revision to GIS position descriptions and improved pay grad equity. |
| GM15 | Assembling of temporary task forces for special projects | 5 | A proven organizational vehicle for coordination of multiple organizations and departments in major initiatives and projects is the creation of "project teams" or "task forces" that include representatives from all effected organizations—with good leadership and clear definition of objectives and responsibilities. LOJIC and its partners (perhaps working through a reactivated Steering Committee) should create project teams to support and guide major initiatives ( e.g., planned software upgrade to ArcGIS version 10.2). |
| GM16 | Recognition for GIS accomplishments | 4 | Formal recognition of accomplishments is a standard practice to non-monetary reward and morale building for staff. LOJIC may consider a formal program to recognize major GIS accomplishments (e.g., newly launched custom application) for staff of LOJIC, partner organizations, and licensees. |
| GM17 | "One Water" initiative driving possible merged services | 3 | The recently launched OneWater initiative will explore shared services between MSD and LWC. This could have an impact on information technology infrastructure and support services including support for GIS operations of LOJIC and its partners. |
| GM18 | Preserving institutional knowledge documentation of GIS business processes | 5 | A concern for LOJIC and all partner organizations is the loss of key personnel—and with them extremely valuable experience and "business process workflow" information. This concern relative to GIS-related processes (e.g., GIS database update and quality control) drives a need for better documentation of business processes and reference to information sources that support the business processes. |
| GM19 | Open Data Initiative | 3 | Metro has launched an initiative to provide expanded access to data generated and used by Metro departments—using Web-based tools for better public access. A Web-based Open Data Portal has been created and work is under way to use this portal as platform for public access. MSD has similar interest in expanded public data access. GIS can play a role supporting this initiative through providing the public to access information through spatial queries and as map displays. |

[1] The "importance score" (from 1 to 8) reflects the extent to which that issue or observation should drive some change or action for LOJIC and/or partner organizations. A score of "1" means very low importance and a score of "8" indicates extremely high importance.

## 4.2 TECHNICAL INFRASTRUCTURE, SOFTWARE, AND SYSTEMS ADMINISTRATION

Table 6 identifies and describes key issues and observations relating to technical aspects of GIS infrastructure and operations.

### Table 6: Technical Infrastructure, Software, and Systems Administration Observations

| ID | Issue/Observation | Importance Score[1] | Explanation |
|---|---|---|---|
| TE1 | ArcGIS slowdowns and performance problems | 7 | Except for LWC that maintains it own GIS software and network, LOJIC partners are experiencing significant performance problems (response time, system hangs, and sessions crashing) in use of Citrix access to ArcGIS software. This problem has not been thoroughly investigated and may be the result of multiple software, server hardware, and network limitations. This should be examined as part of the current MSD IT upgrade effort. |
| TE2 | Major improvements to MSD IT server, network, and system administration environment | 7 | The LOJIC GIS database and software uses a server and network environment maintained by the MSD IT Department. Recent evaluations have revealed configuration and system administration inefficiencies which contribute to functional and performance limitations for GIS users. MSD IT is in the process of a major overhaul of its IT infrastructure that includes server upgrade and consolidation, network upgrades, more efficient provisioning of virtual server resources, re-allocation of user and computer accounts, improved system administration, and more robust system administration, back-up, and disaster recovery environment. These improvements which are scheduled for completion in 2015, will provide improvements in performance and reduction of current problems in user access. |
| TE3 | Integration of LOJIC Online Map with PVA tool for parcel and real property data | 5 | This is both a policy and technical issue based on the need for many users to have flexible access to LOJIC data and services (often through the LOJIC Online map) AND PVA subscription for its online tool for parcel and real property data access and mapping. This would provide a single interface without the need for users to move between two applications. |
| TE4 | Upgrade to ArcGIS 10.2 (or 10.3) | 7 | There is general consensus, and a proposal by the LOJIC Manager, to undertake, as soon as possible, a migration to ArcGIS version 10.2 (from the current 10.0 environment)—to use functionality enhancements in 10.2, position for GIS integration with external systems, and provide a better environment for future software upgrades. This is a major effort with the likely need for adjustments to the ArcSDE database, custom applications, user accounts, etc. It should be well-planned, supported by a team with members from each partner organization, and supported with necessary contractors. Note: ArcGIS 10.3 has been recently released by Esri so a jump to this new version should be considered. |
| TE5 | Right mix of desktop GIS versus web users. | 5 | LOJIC staff and users in partner organizations make substantial use of desktop ArcGIS software through Citrix access to LOJIC servers. This has the advantage of a more simplified management of software licenses, user accounts, etc. (as opposed to local desktop software). There is some technical complexity to Citrix configuration and support. As part of the MSD IT upgrade and GIS software upgrade (ArcGIS 10.2), LOJIC should explore the need for ArcGIS access through Citrix as opposed to more use of ArcGIS Server with Web browser access to GIS. |
| TE6 | Upgrade to Infor/Hansen 8.3-may require GIS integration capabilities to replace HARP | 5 | HARP is a custom application and user interface to integrate GIS with Hansen (v.8.2) software, for MSD and Louisville Metro, to support customer calls and support, inspections, and field maintenance work. A decision has been made to upgrade to the current Infor/Hansen version 8.3. This new version has better embedded capabilities for GIS integration. Deploying version 8.3 will likely be a driver to replace the highly customized HARP applications. This is major project and requires a clear plan, a project team with representatives from MSD and Louisville Metro, and customization as part of a migration from HARP. |

| ID | Issue/Observation | Importance Score[1] | Explanation |
|---|---|---|---|
| TE7 | Mobile GIS application standard needed. For mobile software and device type | 4 | There is interest in expanded use of GIS field-based access on mobile devices (mainly tablet computers and smart phones). The PVA and LWC, and Louisville Metro are now pursuing initiatives for expanding field-based GIS and MSD is considering future field-based GIS applications. LOJIC currently has no defined standards supporting field-based GIS applications—software platform, design guidelines, device OS and type. Creating such standards would provide for a more unified development of field-based applications and potentially a LOJIC Web Site designed for mobile devices. |
| TE8 | LOJIC Website redesign | 5 | Comments from LOJIC staff, partners, and external users have suggested that the LOJIC Web Site should be redesigned to improve appearance, navigation, and features.  The Croswell-Schulte team is carrying out a review of the current Web Site and, in the next deliverable, will provide results of the review and recommendations for a possible redesign and development. |
| TE9 | Future role of ArcGIS Online | 4 | Esri is strongly promoting use of its Cloud-based GIS platform, ArcGIS Online (AGOL). The role that AGOL may have in the future for LOJIC and its partners has not been defined. LOJIC partners are making some use of AGOL but there have not been major deployments or a plan for future deployment. As part of future GIS application deployment and system/software upgrades, LOJIC and its partners should consider opportunities for AGOL use—keeping in mind additional costs (for AGOL credits), functionality and template applications available in AGOL, whether there is advantage of AGOL use as opposed to expanded set of ArcGIS server applications. |
| TE10 | MetroSafe need for export of ArcGIS data to support Intergraph computer aided dispatch system | 3 | GIS capabilities are incorporated into the Intergraph CAD software through use of the Intergraph GIS software product, GeoMedia which has a different data structure than ArcGIS geodatabase. ArcGIS data is regularly exported, translated, and imported to GeoMedia. This is a multiple day operation with considerable manual intervention. There is a need to explore possible direct use of ArcGIS data (by the Intergraph CAD software) and more efficient and more highly automated GIS data export and import. |
| TE11 | Coordinate system/projection issues desktop vs. Web | 3 | Map display in Web-based GIS applications use the Web Mercator map projection while LOJIC GIS data is stored using the Kentucky State Plane coordinate system. It is not a smooth and transparent process to carry out necessary coordinate system/projection transformation to support proper map display in GIS Web services. |

[1]The "importance score" (from 1 to 8) reflects the extent to which that issue or observation should drive some change or action for LOJIC and/or partner organizations. A score of "1" means very low importance and a score of "8" indicates extremely high importance.

## 4.3 CURRENT AND POSSIBLE ENHANCED OR NEW APPLICATIONS AND SERVICES

Table 7 identifies and describes key issues and observations relating to current, enhanced, and new GIS application development, deployment, and use.

**Table 7: Current and Possible Enhanced, or New GIS Applications and Services**

| ID | Issue/Observation | Importance Score[1] | Explanation |
|---|---|---|---|
| AP1 | LOJIC Website redesign | 5 | See Observation TE8. Comments from LOJIC staff, partners, and external users have suggested that the LOJIC Web Site should be redesigned to improve appearance, navigation, and features. The Croswell-Schulte team is in the process of evaluating the LOJIC Web Site and will provide recommendations for possible re-design and redevelopment in the next deliverable. |
| AP2 | Hansen Upgrade and GIS Interface | 3 | See Observation TE6. Plans are being made for a migration from Infor/Hansen v8.2 to v8.3 for users in MSD and Louisville Metro. This presents an opportunity for use of ArcGIS integration tools in the new version. The software upgrade raises a question about the future of HARP and if this should be retired after deployment of the new Hansen software. This is an important issue given the extent to which custom interfaces and functionality has been included in HARP (particularly for MSD users). |
| AP3 | Mobile GIS application standard needed. For mobile software and device type. | 4 | See Observation TE7. There is interest in expanded use of GIS field-based access on mobile devices (mainly tablet computers and smart phones). The PVA and LWC, and Louisville Metro are now pursuing initiatives for expanding field-based GIS and MSD is considering future field-based GIS applications. LOJIC currently has no defined standards supporting field-based GIS applications—software platform, design guidelines, device OS and type. Creating such standards would provide for a more unified development of field-based applications and potentially a LOJIC Web Site designed for mobile devices. |
| AP4 | Future role of ArcGIS Online (AGOL) | 4 | See Observation TE9. The role that AGOL may have in the future for LOJIC and its partners has not been defined. LOJIC and its partners should consider opportunities for AGOL use—keeping in mind additional costs (for AGOL credits), functionality and template applications available in AGOL, whether there is advantage of AGOL use as opposed to expanded set of ArcGIS server applications. |
| AP5 | PVA migration to new CAMA system with GIS integration | 6 | The PVA has selected a new CAMA software package (E-Ring) and plans to deploy and migrate to this new platform over the next year. This effort includes more robust GIS integration. LOJIC staff should be ready to support development of GIS integration features in cooperation with the PVA and software vendor. |
| AP6 | Improve functionality of the LOJIC Online Map | 6 | See 2.5 for some possible enhancements in functionality and usability of the LOJIC Online Map tool. |
| AP7 | Role of commercial, external Web mapping services | 7 | The available of publicly accessible Web mapping and location-based services from such companies and organizations as Google (GoogleMaps, Google Earth), Microsoft (BingMaps), and smaller start-up companies providing online GIS services. LOJIC and its users should better define assets and applications that these sites provide while being clear about their limitations in data content and currency and functionality. Providing greater integration of these services with LOJIC Online tools as well as possible collaboration with these companies should be explored. It should be noted that the Web-based map services provided by Google and Microsoft may be free to individual consumers but have a cost and license terms if used by organizations as a Web-based GIS platform. |
| AP8 | Proactive examination and regular work on custom applications by LOJIC team | 6 | Looking ahead to a complete deployment of ArcGIS v10.2, improved IT infrastructure, and full staff complement, the LOJIC Manager, in coordination with LOJIC partners, should select one or two "special projects" each year—do-able projects that deliver clear benefits for LOJIC partners and which have some visibility. Candidates may be custom applications (see Section 2.4 and 4.2) above or projects that support a community event or organization (e.g., a Derby Festival application). |
| **Ideas for New or Enhanced GIS Applications:** | | | |
| AP9 | New/Enhanced GIS Application Idea: New application with street navigation and routing capability | 5 | The rich and regularly updated LOJIC GIS database and Esri GIS tools, provide a basis for special applications to support routing requirements for LOJIC partners (e.g., field appraisers of PVA, MSD and Louisville Metro inspection work, LWC inspections and meter reading). A custom interface would provide users with an ability to identify start point, end point, and intermediate stops and the application would delineate an optimal route in map form and directions. |

| ID | Issue/Observation | Importance Score[1] | Explanation |
|---|---|---|---|
| AP10 | New/Enhanced GIS Application Idea: Custom GIS query and access tools | 6 | Louisville Metro and PVA have expressed interest in design and development of interactive Web-based tool, with an intuitive interface to perform query, simple analysis, and map display—geared toward user needs in those organizations. This would be deployed in an ArcGIS Server environment. |
| AP11 | New/Enhanced GIS Application Idea:  Property owner search | 6 | A general tool (ideally Web-based) allowing users to enter a location (parcel or address) and search parameters. The application performs a buffer search and retrieves information on property owners within the buffer area—and generation of a list that can be exported. |
| AP12 | New/Enhanced GIS Application Idea:  GIS based-query and mapping to display current and upcoming construction projects | 5 | Establish database with point features or polygons, updated by users, with information on planned construction projects (capital projects and potentially large private development projects) and prepare custom interface and query tools to support coordination of multiple projects from different organizations (Louisville Metro, MSD, LWC, other utility organizations) and avoid multiple excavations/repaving. |
| AP13 | New/Enhanced GIS Application Idea:  Use GIS to support LouieStat | 5 | LouieStat (http://louiestat.louisvilleky.gov/) is managed by Louisville Metro's Office of Performance Improvement (OPI) to provide data on department performance (for key programs and services) to support decision making and improvements in performance. The OPI and individual departments could potentially benefit from tools to geographically query and mapping of LouieStat data. |
| AP14 | New/Enhanced GIS Application Idea: Land development factor query tool | 5 | Custom interface for LOJIC partners, licensees, external users providing a quick method to identify development factors and restrictions associated with a location or parcel—floodplain, zoning, preservation districts, environmental concerns, utility service availability). Result would be a map display with tabular listing of development restrictions. |
| AP15 | New/Enhanced GIS Application Idea: New application: economic development query | 4 | Tool to perform query to identify economic development—including retail and commercial sites and larger industrial sites (examining size of land tracts, vacant building space, utility service, and zoning) and identification of candidate sites. This would be available as an application for LOJIC partners as well as a public Web-based service. |
| AP16 | New/Enhanced GIS Application Idea: Terrain visualization and analysis | 4 | For use by LOJIC partners can make more effective use of digital elevation data and ArcGIS analysis and visualization tools to generate 3-D views (shaded relief, GIS map layers draped over 3-D view) and terrain analysis—including renderings for land development scenarios, viewshed analysis, and slope analysis. |
| AP17 | New/Enhanced GIS Application Idea: Traffic and security camera monitoring | 4 | Web-based GIS interface to query and see locations of cameras, video feed in window, and ability to control camera angle. May be applied to traffic cameras or site security cameras. |

[1]The "importance score" (from 1 to 8) reflects the extent to which that issue or observation should drive some change or action for LOJIC and/or partner organizations. A score of "1" means very low importance and a score of "8" indicates extremely high importance.

## 4.4 GIS DATA CONTENT, ACCESS, AND MAINTENANCE

Table 8 identifies and describes key issues and observations relating to GIS database content, administration, maintenance, and user access.

**Table 8: Data Content, Access, and Maintenance Observations**

| ID | Issue/Observation | Importance Score[1] | Explanation |
|---|---|---|---|
| DA1 | LOJIC Metadata standards and requirements | 6 | The value of maintaining and providing access to standards-based metadata is well-established and LOJIC oversees a strict policy on metadata creation and update for new or revised GIS data. Users have expressed concerns that policies are too restrictive and inhibit creation of GIS data for project work. This concern suggests a need to re-examine metadata standards and policies and tools available for metadata update (possibly further automation of existing manual steps). |
| DA2 | Improved access to metadata | 6 | Some users have expressed a need for better information about GIS data—what data is available, when it has been updated, method or restrictions for access. |
| DA3 | Possible GIS data review prioritization effort? | 5 | LOJIC stores and manages over 800 data layers as ArcSDE Geodatabase Feature Classes and datasets. Some of these layers are frequently accessed by many users and others are less frequently needed or may be useful mainly for a specific project or small group of users. Since LOJIC does not (and should not) have direct control over creation of all new GIS datasets, it may be valuable to formally categorize GIS data. One category could be reserved for project or user-specific data not for general use (non-Enterprise) and to which a less restrictive set of policies and standards applies. |
| DA4 | Open data initiative and impact on LOJIC data | 5 | Also see Observation GM19. The Open Data initiative will drive decisions on GIS data format, content, and maintenance and policies in place now for fee-based distribution of LOJIC data and custom products. Consideration must be given to the future of fee-based services and how GIS data can be configured to support the Open Data initiative and specific eGov applications. LOJIC partner organizations Louisville Metro and MSD mentioned that Open Data initiatives were being formally pursued. |
| DA5 | Broader access to Pictometry data for all LOJIC users | 5 | The PVA maintains and covers the cost of a Pictometry license—for acquisition of vertical and oblique aerial imagery and its tools for viewing and analysis. Because of current license terms, this is not generally accessible by other LOJIC partners but could be of great value to support public safety and inspection programs. Prior to the next Pictometry imagery acquisition, the PVA, LOJIC, and Pictometry should reach an agreement to expand general access and deploy for use by LOJIC partners. |
| DA6 | GIS data coverage outside of Jefferson County | 6 | With the exception of the PVA, all LOJIC partners have an interest in land outside of Jefferson County—MSD and LWC services areas and a need for regional data for land use planning and emergency management support. LOJIC licensees TARC, KIPDA, and the Kentucky Transportation Cabinet have multi-County areas of responsibility. In addition to Jefferson County data, LOJIC maintains base map data for Bullitt and Oldham Counties. In the 2007 LOJI Strategic Plan, the Policy Board accepted a goal for LOJIC to become a regional GIS data hub—over an 11-county area. With additional input from partners LOJIC should explore approaches and the operational and financial implications of an expansion in coverage and base decisions to pursue expansion on this review. Any expansion that does occur should be done in a way that does not negatively impact current product and service quality. |
| DA7 | Access to and use of DEM data | 4 | On an approximate 3-year cycle, LOJIC acquires new LiDAR data and uses this elevation data for the generation of topographic contour maps. Digital elevation models created from processed LiDAR data could be used with ArcGIS 3-D analysis software to perform a wide range of terrain visualization and analysis applications which are not currently in use. |
| DA8 | Enhanced place name database. Use Louisville Metro dispatch data as basis | 4 | Following work already carried out by MetroSafe, it would be valuable to develop and deploy a point location GIS data layer with commonly needed landmarks and place names (e.g. government and commercial buildings, schools, health facilities, parks, etc.). |

| ID | Issue/Observation | Importance Score[1] | Explanation |
|---|---|---|---|
| DA9 | Restrictions on access and distribution of water utility data | 3 | Currently, water distribution map data is not available to LOJIC Online Map users because of data access and distribution policies in place for LWC. |
| DA10 | Frequency of parcel data transfer from PVA needs to be more frequent | 5 | Plans have been made to move from a weekly upload of parcel data (reflecting property transfers and new parcels) to the LOJIC database to a daily process which will resolve most of the current problems experience by users (see parcel in GIS with no attribute data available). |
| DA11 | Subdivision survey closure check | 5 | There are some problems with proper checking and correction of survey closure for newly proposed subdivisions. This can create complications in use of subdivision plats as a source for parcel data update (by the PVA). Louisville Metro and the PVA (perhaps with LOJIC support) should identify workflow and technical causes and improve the process. |
| DA12 | Building permit data access | 4 | Some external users expressed an interest in having building permit status information available through the LOJIC Online Map tool. |
| DA13 | Integration of LOJIC Online map with KIPDA traffic volume stats | 3 | Users have expressed interest in accessing traffic volume information in an online map form. LOJIC could explore how this may be provided—perhaps as Web-based map service from KIPDA. |
| DA14 | Tree canopy and individual tree inventory in GIS form | 3 | Users have expressed interest in having GIS data for tree canopies—and individual trees in parks and public rights-of-way (as many cities have done). Metro Parks has made some progress but there is no short-term plan for capture of complete tree data. |
| DA15 | Statewide or regional parcel layer and possible LOJIC role | 2 | External users—primarily real estate development firms, have expressed interest in creation of a regional (multi-County) GIS parcel layer and have inquired about a possible role for LOJIC in such an effort. This would undoubtedly involve the Kentucky Revenue Cabinet and individual County PVAs. While such an effort has significant administrative and organizational complexity, it should be considered, at least as a long-term initiative. LOJIC could play a role (multi-County pilot) if there was necessary Revenue Cabinet involvement. |
| DA16 | Possible use of high-resolution satellite imagery | 3 | LOJIC has followed a regular (approximately 3-year cycle) for re-flights and acquisition of high-resolution and LiDAR, and use of this data for update of planimetric mapping. LOJIC has proposed delaying the next update to 2016 to coincide with expected completion of bridge projects. As part of planning for future orthoimagery acquisition, LOJIC should explore possible use of high-resolution satellite data instead of or in addition to imagery captured from aircraft scanners. The recent WorldView 3 satellite has 33cm resolution has panchromatic data and plans for a higher resolution satellite next year. |
| DA17 | Automatic feature delineation tools for planimetric mapping | 3 | A part of the next project for re-acquisition of orthoimagery and LiDAR (planned for 2016), examine the use of tools for automatic feature delineation for planimetric map update (carried out in-house or under contract). |
| DA18 | Data support for Next Gen 911 | 5 | Public safety organizations of Louisville Metro, municipalities in Jefferson County, and fire districts will be adopting Next Gen 911 tools and infrastructure to support more robust emergency dispatch. Next Gen 911 encompasses a digital transmission protocol and more robust capabilities for locating voice emergency calls (from land lines and cell phones) as well as other communication environments (text messaging, social media). Next Gen 911 is heavily dependent on GIS data—accurate boundary data, site addresses and sub-addresses, and other site location data. This may require some modification of the structure of current GIS-based street centerline and address data and how this data is loaded to the MetroSafe computer-aided dispatch system. This may drive GIS database changes to fully support services of emergency dispatch software. |

[1]The "importance score" (from 1 to 8) reflects the extent to which that issue or observation should drive some change or action for LOJIC and/or partner organizations. A score of "1" means very low importance and a score of "8" indicates extremely high importance.

## 4.5 LOJIC BUDGET AND FINANCES

Table 9 identifies and describes key issues and observations relating to funding and financial aspects of LOJIC and GIS operations in its partner organizations.

## Table 9: Budget and Finances Observations

| ID | Issue/Observation | Importance Score[1] | Explanation |
|---|---|---|---|
| FI1 | Decrease in revenue from product and data sales | 7 | Revenues from the sale of data and custom products (not including license costs) have declined significantly in recent years—from an average annual total of about $120,000 for the 5 years ending in FY2006 to $45,000 in the last 8 years. This reduction has an overall impact on the LOJIC budget with the need to make up revenue drops from other sources. |
| FI2 | Reimbursement levels from LOJIC partners | 8 | Contributions from LOJIC partners (PVA, Louisville Metro, and LWC) dropped significantly starting in FY2010. MSD has assumed much a much higher percentage of costs--about 75% compared to the original 35%. This includes all LOJIC staff costs. A proposal before the Policy Board calls for a gradual increase in reimbursements over a three year period starting in FY 2016. In the long-term, it is desirable to put in place a more equitable cost allocation with the understanding that LOJIC delivers value—in terms of system infrastructure, software, data, and GIS support services. |
| FI3 | Potential increase in LOJIC staff | 6 | Current LOJIC staff faces time and capacity limitations—the majority of staff time is devoted to maintain current operations—with little time available for proactive planning, service enhancements, and greater user support to explore and develop new applications. Part of the cause is current vacancies (2 positions) which are in the process of being filled but staff constraints will still exist. LOJIC budget projections do not include resources for additional staff (above current levels). LOJIC operations and user support would benefit from one additional LOJIC staff person—a GIS analyst that would, work with LOJIC partners for enhanced user support, explore new GIS data and applications, and work with technical staff in application and database design. |
| FI4 | LOJIC staff position salary grade | 6 | See Observation GM14. Possible adjustments to position descriptions and pay scales would have an impact on LOJIC budget. |
| FI5 | Possible increases in revenue from LOJIC licenses | 6 | License fees for LOJIC data and system access (see 2.5) are, in comparison to fees in other multi-organizational GIS consortia, quite low. LOJIC license fees have traditionally been set to encourage external organizations to adopt GIS technology to support their missions. |
| FI6 | New funding sources and financing approaches | 8 | To augment current revenue sources which include: a) Partner reimbursements, b) license fees, and c) sales of LOJIC data and products, LOJIC should consider other pursuing other funding sources and approaches. Some possible new funding opportunities which have worked well for other GIS programs are listed below. Each of these funding approaches is based on their connection with GIS products and services provided by LOJIC :<br><br>• allocation of a portion (standard percentage) of budgeted costs for capital infrastructure projects (MSD and Louisville Metro) going to a special fund to support LOJIC and GIS services for partners.<br>• Allocation from other capital projects (non infrastructure) going to a special LOJIC/GIS fund.<br>• Portion of a fee for land-related document recordation (County Clerk) to a fund supporting LOJIC and GIS operations and special projects. This would apply to recordation of plats, deeds, surveys, and property transfer documents. May require legislation.<br>• Portion of a fee for specific permits (e.g., building permits) allocated to a special fund for GIS.<br>• Greater use of grants from government or non-profit organizations to support special GIS projects. There are few grants available specifically for GIS but there are program-specific grant programs (e.g., public safety, public health, social services) that may have a GIS component. Would require time for grant research and grant application preparation.<br>• Take on more special project work for which there would be an independent revenue stream—for use of LOJIC staff, software, and data. |

[1]The "importance score" (from 1 to 8) reflects the extent to which that issue or observation should drive some change or action for LOJIC and/or partner organizations. A score of "1" means very low importance and a score of "8" indicates extremely high importance.

## APPENDIX A: SUMMARY NOTES FROM FOCUS GROUP SESSIONS

This appendix includes notes from the following Focus Group sessions:

- Louisville/Jefferson County Metro Government, November 6
- Jefferson Co. PVA, November 6
- Louisville Water Co., November 7
- Metropolitan Sewer District, November 7
- LOJIC Staff, November 13
- Licensee/External User Session #1 and #2, November 14

## A1. FOCUS GROUP SUMMARY NOTES-METRO GOVERNMENT

**LOJIC INNOVATIVE GIS BEST PRACTICES PROJECT**
**Metro Government Focus Group Session**
**November 6, 2014 9:00am – 11:30am**

**Summary Notes**

**Attendees:**

| | | | |
|---|---|---|---|
| Peter Croswell | Croswell-Schulte IT Consultants<br>502-848-8827<br>pcroswell@croswell-schulte.com | Scot Taylor | GeoMorphics, Inc.<br>502-709-5378<br>scot.taylor@geomorphics.com |
| Sarah Taylor | GeoMorphics, Inc.<br>502-873-5484<br>sarah.taylor@geomorpics.com | Donnie Masden | Louisville Metro Police<br>502-574-4627<br>donnie.masden@louisvilleky.gov |
| Jess Hamner | Metro Technology<br>502-574-3356<br>jess.hamner@gmail.com | Ben Post | Metro Technology<br>502-574-2303<br>ben.post@louisvilleky.org |
| Debbie Lowery | MTS<br>502-574-3750<br>debbie.lowery@louisvilleky.org | Sharon Meador | MTS<br>502-574-6499<br>sharon.meador@louisvilleky.org |
| Bryan Frazar | Air Pollution Control District<br>502-574-7276<br>bryan.frazar@louisvilleky.gov | | |

**Overview**

This document contains summary notes on key points from the Metro Focus Group Session for the LOJIC Innovative GIS best practices project being carried out by the Croswell-Schulte consultant team. The meeting followed the agenda provided to the Metro Government participants prior to the meeting. Mr. Croswell gave a brief overview of project background and purpose of the Session, including how it is part of the current LOJIC Strategy Innovation effort. Many of the meeting topics addressed key points and issues identified in Metro's Self-Assessment report. Metro Government participants provided an overview of their historical and current use of GIS technical and LOJIC data and services which is substantial. There was discussion about the lack of an enterprise GIS organizational structure for Metro Government departments and recent directives to explore a more centrally-organized GIS program. Some of the session involved looking into possible expansion of the current Metro GIS user community and some ideas were suggested in areas of public safety, public health, economic development, and other areas.

**Internal Users**
- LOJIC metadata requirements hinders publishing or submitting data. Are these requirements too excessive for all data?
- Internal sharing of data needs to improve.
- Could LOJIC enable a web-based tool for requesting data?
- Projections on the data do not match between what departments need/use - Web Mercator vs. State Plane.
- LMPD rely on LOJIC for accuracy rather than Google or other mapping engines.

**External Users**
- The current community base is smaller than it could be; however the public is making more and more requests.
- Data is difficult for GIS users to acquire, there is the appearance of data not being shared.
- More public web enabled applications to expand.
- Metro is responding to major Open Data directives to expand and improve public access to Metro data and records. GIS can play a role in providing an effective way to provide access to government data sources.

**Internal Concerns**
- LMPD is not allowed to refer public to online services to fulfill open record requests.
- No centralized "data hub" for metro government users.
- Ability to share unpublished data and who is responsible for maintaining data?
- Need management support for GIS and training opportunities. Might be interest in preparing a formal business case to identify current and potential future value of GIS technology and data and the role that LOJIC plays.
- LOJIC GIS access via Citrix has presented some problems
- Could benefit from access to a general "place name database" to allow matching of addresses with place name references (perhaps using Metro's dispatch database as a basis)
- Some technical difficulties in GIS data transfer to the Intergraph (GeoMedia) emergency dispatch system

**Training**
- Need for training throughout departments (develop training plan)
- Need for dedicated staff members
- Training obstacles include cost as well as specifically designating time for employees to participate in Web-based or instructor-led classes

**Ideas for LOJIC future services and support**
- Branding the LOJIC term is important. Partnering with Google may not be a viable option due to lack of willingness to compromise on costs.
  - Louisville has a "Keep It Weird" movement, LOJIC should play into this niche
  - Work with the Tourism Board, Kentucky Kingdom and the Fair Board to promote events with LOJIC data/maps
- LMPD thinks it would be beneficial if LOJIC added a Demographer to the staff.
- LOJIC should acquire public health data.
  - Surveys, flu shot clinics, health clinics, ER waiting times, exposures, etc.
- ArcGIS online is needed and wanted, however there are concerns over security issues.
- View on open data as a money saver vs. money maker.
- Continue to work with Open Data Committee on determining what information should be included.
- Allowing outside developers to develop apps for public use with available data to take the burden off of LOJIC.
- Expand database collection to surrounding counties—public safety, economic development, solid waste, and other Metro business areas could make use of data outside Jefferson County
- Allow for quicker or automatic data downloads/uploads for internal users and reduce the time offline for maintenance and other unplanned outages.
- Use of brownbag lunches or short meetings for communicating latest trends/uses among the LOJIC partner groups. Should LOJIC User Group be reactivated?
- Evaluate other revenue sources for GIS programs.
- Interest and need expressed by LMPD for pictometry and/or 3D data gathering. Currently, license and access to Pictometry data/services is held by PVA and is not generally accessible by other LOJIC partners.

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## A2. FOCUS GROUP SUMMARY NOTES-PROPERTY VALUATION ADMINISTRATOR (PVA)

**LOJIC INNOVATIVE GIS BEST PRACTICES PROJECT**
**Jefferson County PVA Focus Group Session**
**November 6, 2014 1:30pm – 4:00pm**

Summary Notes

**Attendees:**

| | | | |
|---|---|---|---|
| Peter Croswell | Croswell-Schulte IT Consultants<br>502-848-8827<br>pcroswell@croswell-schulte.com | Scot Taylor | GeoMorphics, Inc.<br>502-709-5378<br>scot.taylor@geomorphics.com |
| Sarah Taylor | GeoMorphics, Inc.<br>502-873-5484<br>sarah.taylor@geomorpics.com | Jay Mickle | Jefferson County PVA<br>502-574-66243<br>jmickle@jeffersonpva.ky.gov |
| Renee Harlow | Jefferson County PVA<br>502-574-6380 x9304<br>rharlow@jeffersonpva.ky.gov | Paul Higgs | Jefferson County PVA<br>502-574-6380 x9330<br>phiggs@jeffersonpva.ky.gov |

**Overview**

This document contains summary notes on key points from the Metro Focus Group Session for the LOJIC Innovative GIS best practices project being carried out by the Croswell-Schulte consultant team. The meeting followed the agenda provided to PVA participants prior to the meeting. Mr. Croswell gave a brief overview of project background and purpose of the Session, including how it is part of the current LOJIC Strategy Innovation effort. Many of the meeting topics addressed key points and issues identified in the PVA Self-Assessment report. PVA participants provided an overview of their historical and current use of GIS technical and LOJIC data and services which is substantial. This confirmed the value of GIS to PVA staff and external users that require parcel mapping and real property data. Mr. Mickle described the support received from LOJIC and the close working relationship that has been in place since the 1990s. Discussion included an overview of PVA subscription services providing the public and external organizations with parcel map and data sources.

**Internal Users and Applications**

- GIS use in the PVA is managed by the Mapping, GIS &Ownership Department which includes staff and business activities for parcel mapping, GIS applications, and property ownership data
- Mapping staff make regular use of GIS, through the Citrix connection to LOJIC for parcel map and data update and custom mapping work. The users access ArcGIS (through Citrix) and applications from the custom parcel mapping product from SDS.
- There is some use of the LOJIC Web-based Online Mapping application although there is room for expanded use by PVA staff. There is interest in the development of a more flexible Web-based (browser access) GIS query and map display tool that is customized for PVA.
- The ArcGIS Network Analyst is used (in the office) to generate routes for field appraisers
- There is currently no field-based access to GIS or other IT tools to support field appraisers. Field appraisal work is carried out on a routine basis—to inspect properties after major improvements and to meet requirements for field visit to all properties every four years.
- PVA GIS has historically been verifying property location and updating data layers.
- Currently there is
- Field assessors will have mobile devises with GIS cashed maps within 1-2 years.

- New CAMA software has been selected (E-Ring) and its implementation is underway with expected launch by September 2015. Transition to ArcGIS 10.2 or 10.3 will likely be timed with this CAMA implementation. The PVA is interested in using E-Ring tools for GIS integration and for field device access.
- PVA staff make frequent use of the Pictometry data and applications. Currently, the PVA pays for and holds the license for Pictometry and there is limited access by non-PVA LOJIC user community
- With the new CAMA update, real property data upload to the LOJIC database will move to nightly as opposed to the current weekly schedule.
- It was mentioned that there might be a future application to provide an automated tool to replace, or at least provide an automated option for the current reassessment cards which property owners are required to submit.

**External Users**

- There is a broad external community of users of parcel and real property data—from property owners to a range of public and private organizations. Property owners are provided access to data for free.
- The PVA has a flexible subscription program, with fees, for use by external organizations
- The public has grown to expect database and map information through open records requests. Fees are charged using a rate schedule.
- In some cases, PVA carries out special GIS and mapping project and charges fees for these custom services

**Internal Concerns**

- Software compatibility between CAMA, LOJIC data, and ArcGIS software is important and will be addressed as part of the CAMA implementation work.
- There are significant problems (delays, system hanging) with the Citrix access to LOJIC. This has a significant impact on PVA workflow. Since this problem may have multiple causes, it has not been fully examined or solved.
- LOJIC should consider reactivation of the currently inactive User Group and Technical Committee
- Commercial and residential departments leaning on the GIS users for support due to lack of staff/knowledge.
- There is an opportunity for expanded GIS use by office and field staff if easy to use Web-based and field-based applications are deployed
- Delivery of data is often a struggle. PVA does not intend to purchase individual licenses for all or most staff members. Utilization of web services may provide relief.
- There is concern about some problems with full checking of subdivision survey data and georegistration (which was carried out by Metro Planning and Design). This has some impact on proper survey closure and placement.
- In general, the PVA stated that LOJIC provides very good support. There is recognition that LOJIC staff are very busy with mission-critical operational activities and have limited ability to pursue new applications and processes.
- Additional staff members are needed, but overall staff count is being maintained for budgeting purposes.

**Training**

- PVA makes use of ESRI training services
- Shown interest in the LOJIC user group that used to meet monthly. Great opportunity to network and share and there is interest in reactivating this currently inactive group.

**Ideas for LOJIC**

- Acquire a dedicated network support staff person.
- Provide a dedicated heldesk ticked email system for the partnering agencies.
- Integrate pictometry data through agreement with PVA.

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## A3. FOCUS GROUP SUMMARY NOTES-LOUSVILLE WATER COMPANY (LWC)

**LOJIC INNOVATIVE GIS BEST PRACTICES PROJECT**
**Louisville Water Company Focus Group Session**
**November 7, 2014 9:00am – 11:30am**

Summary Notes

**Attendees:**

| | | | |
|---|---|---|---|
| Peter Croswell | Croswell-Schulte IT Consultants<br>502-848-8827<br>pcroswell@croswell-schulte.com | Scot Taylor | GeoMorphics, Inc.<br>502-709-5378<br>scot.taylor@geomorphics.com |
| Joseph McGanny | LWC<br>502-569-3600 ext. 2398 | Dan Lambert | LWC<br>502-569-3600 ext. 2290 |
| Eric O'Neal | LWC<br>502-569-3600 ext. 2296 | James Bates | LWC<br>502-569-3661 |

**Overview**

This document contains summary notes on key points from the Louisville Water Company (LWC) Focus Group Session for the LOJIC Innovative GIS best practices project being carried out by the Croswell-Schulte consultant team. The meeting followed the agenda provided to LWC participants prior to the meeting. Mr. Croswell gave a brief overview of project background and purpose of the Session, including how it is part of the current LOJIC Strategy Innovation effort. Many of the meeting topics addressed key points and issues identified in the LWC Self-Assessment report. LWC participants provided an overview of their historical and current use of GIS technical and LOJIC data and services which is substantial. The GIS workgroup at LWC is managed under the Infrastructure Records Process, which also includes the Surveying Services and Construction Inspection sub-processes The LWC, different from other LOJIC member organizations, maintains and hosts its own GIS servers, software, and data—with frequent data upload/download of GIS data with LOJIC. Like other LOJIC partner organizations, the LWC benefits from the Esri Enterprise License Agreement (ELA) and LOJIC's maintenance and hosting of base map data.

**Internal Users and Applications**

- GIS data and technology is used extensively throughout the LWC. The LWC user community is broadly organized into 3 main groups:

  a) Core Power Users (about 20 ArcGIS Desktop and Arc GIS server users—data maintenance, analysis, mapping, and other frequent and heavy use of GIS software and data

  b) Casual Web-based users—most access GIS through ArcGIS Server applications including most importantly the Spatial Pipeline Infrastructure Network (SPIN) custom environment

  c) Mobile Users, largest group, who access GIS in the field with laptop computers using the MobileSPIN custom application and a growing number of users accessing new applications deployed for Smart Phones.

- Current SPIN applications allow GIS-based query and access to engineering drawings
- GIS use is expanding within the LWC with new ArcGIS Server applications and expanded mobile use
- TC Technology MapBook custom application is used to support field users

- LWC currently captures GIS point features for service locations. This is the basis for GIS integration with the Customer Care and Billing (CC&B) system (Oracle)
- There is interest in incorporating transmission main condition data (from televised survey) into the main GIS database but data architecture and positional accuracy issues limit this.

**External Users**

- As of now, the LWC has limited to no external users utilizing GIS (other than other LOJIC member organizations).

**Internal/Technical Concerns**

- There is an increased need to upgrade the mobile infrastructure for field users. However there are issues to be addressed on what applications can be deployed on Tablet Computers and Smart Phones because of screen size limitations.
- There is strong interest in continued and expanded base map data coverage outside of Jefferson County to support applications in the LWC service area in Bullitt and Oldham Counties and possible expansion in service area
- LWC is a for profit company, thus has a different perspective than other LOJIC partners.
- There is an effort to being the migration to 10.2. The upgrade is needed for changes in the ArcGIS server, and the PC's are ready. However, there currently is no test server SDE environment—interest in configuring this.
- The OneWater initiative may result in future consolidation of certain support services (including possibly IT and GIS) between MSD and the LWC. There is currently no specific plan but this needs to be kept in mind for future GIS software, infrastructure, and application upgrades and enhancements.
- Mention was made of existing commercial GIS Web services (QPublic, 39 Degrees North) and how this may influence LOJIC Web-based services.
- LWC is currently using an older work ticket application but is in the planning process for migration into an enterprise work/asset management system (Oracle WAM) and will be implementing GIS integration capabilities with WAM.
- The LWC sees its use of LOJIC data as "mission critical."
  - Accurate, timely and updated information is required daily in house and for use by the mobile field users.
  - Sometimes the parcel data isn't updated promptly, and leads to requests that could be avoided.

**Training and User Coordination**

- LWC has its own internal training programs and makes some but limited use of training programs from LOJIC.
- LWC is interested in reactivation of the currently inactive User Group
  - Bi-monthly or quarterly group meetings
  - Technical Issues, Forums, Migration could be some topics covered
  - Guest Speaker from one of the partnering organizations or within the user community
  - Esri presentation once a year
  - The use of Social Media, such as a user blog or Facebook, would be beneficial to have cross communications of LOJIC users.

**Ideas for LOJIC Organizational Structure and Operations**

- Interest in bringing back the currently inactive Technical Committee as a basis for communication, planning, and positioning of LOJIC initiatives and services. The Technical Committee (perhaps renamed to "Steering Committee") should provide information and clear recommendations on major decisions for action by the

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LOJIC Policy Board. This is the most effective organizational relationship to engage senior management with focused input from middle management personnel involved in GIS.

- It would be a positive step if LOJIC could expand its footprint by collecting data regionally and become a regional GIS data provider. The LWC may be willing to support this effort with the proper percentage of funding.
    - o Expanding LOJIC on a regional scale would be good for economic development, specifically the Metropolitan area.
- Even though the LWC is a for profit company, its vision for LOJIC is very similar to other partnering organizations.
- There are approximately 850,000 – 1,000,000 customers for the LWC. This provides a unique opportunity and public base to introduce GIS or use ArcGIS Online to display LWC maps using LOJIC data.
- It would be beneficial to have access to a LOJIC server instead of the required data downloads or using Citrix.
- LOJIC should be willing to entertain and accept new fresh ideas.
    - o Some of the current LOJIC staff may not be up to date with trends or future features and how they can benefit the community.
- Would LOJIC be better served if it focused more on GIS data and software rather than custom application development?
    - o How spread out is LOJIC staff in developing applications that may not be needed or utilized?
- Could renegotiations of the % of financial support be beneficial to LOJIC or its partners?
    - o Base support on data used, not necessarily number of users
    - o Data to user ratios may be skewed to allow some partners to support LOJIC less than others. Thus some entities are paying more but using less.
- Can LOJIC justify the need (or want) of increasing the bandwidth to allow for faster data transfers?
- LWC would support the idea of LOJIC allowing open data.
    - o Would keep some data confidential based on privacy issues.
- Would intersection topology be beneficial to other LOJIC users?

## A4. FOCUS GROUP SUMMARY NOTES-METROPOLITAN SEWER DISTRICT (MSD)

**LOJIC INNOVATIVE GIS BEST PRACTICES PROJECT**
**MSD Focus Group Session**
**November 7, 2014 1:30pm – 4:30pm**

**Summary Notes**

**Attendees:**

| Name | Affiliation / Contact | Name | Affiliation / Contact |
|---|---|---|---|
| Peter Croswell | Croswell-Schulte IT Consultants<br>502-848-8827<br>pcroswell@croswell-schulte.com | Scot Taylor | GeoMorphics, Inc.<br>502-709-5378<br>scot.taylor@geomorphics.com |
| Julie Buckler | GIS Services/Eng.<br>502-540-6443<br>julie.buckler@louisvillemsd.org | Loren Levitz | GIS Services/Eng.<br>502-540-6239<br>loren.levitz@louisvillemsd.org |
| Eric Weidner | GIS Services/Eng.<br>502-540-6419<br>eric.weidner@louisvillemsd.org | Dan French | Engineering – Planning<br>502-540-6286<br>dan.french@louisvillemsd.org |
| Wolffie Miller | EMR – Design<br>502-540-6626<br>christian.miller@louisvillemsd.org | Sean Craig | Engineering – RS<br>502-540-6973<br>sean.craig@louisvillemsd.org |
| Stacy Pritchard | GIS Services/Eng.<br>502-540-6527<br>stacy.pritchard@louisvillemsd.org | Heather Dodds | Operations – Performance<br>502-540-6961<br>heather.dodds@louisvillemsd.org |

**Overview**

This document contains summary notes on key points from the Metropolitan Sewer District (MSD) Focus Group Session for the LOJIC Innovative GIS best practices project being carried out by the Croswell-Schulte consultant team. The meeting followed the agenda provided to LWC participants prior to the meeting. Mr. Croswell gave a brief overview of project background and purpose of the Session, including how it is part of the current LOJIC Strategy Innovation effort. Many of the meeting topics addressed key points and issues identified in the MSD Self-Assessment report. MSD participants provided an overview of their historical and current use of GIS technical and LOJIC data and services which is substantial. MSD led the GIS development effort that began in the late 1980s in a process that later became LOJIC. MSD serves as the administrative home for LOJIC management and staff and LOJIC uses MSD IT support for server, software, and network operation and administration. GIS in MSD is managed in the GIS and Records Department of MSD's Engineering Division. GIS is utilized throughout MSD with applications in a wide range of business areas— Engineering, Customer Relations, Operations, Legal, Industrial Compliance and Monitoring and Finance departments use GIS applications and GIS data every day. MSD maintains a large number of GIS data layers relating to all aspects of the sanitary sewer system, store sewer system, drainage and flood control.

**Internal Users and Applications**

- Every department inside MSD uses GIS in some form.
- The sizable MSD-maintained GIS database (160 layers) contributes to the importance of providing good tools for metadata access and user access to specific data.

- MD sanitary sewer Feature Classes are structured into a network supporting GIS network tracing applications.
- Currently, MSD does not utilize GIS in mobile devices but there is interest in exploring and implementating mobile applications (e.g., to support inspections and maintenance operations) if there is a clear business case.
- Data, specifically GIS data, is growing exponentially.
    - o MSD maintains in excess of 160 data layers.
    - o Due to this fact, the use of GIS data, apps, and maps usage is difficult for new staff to adapt to.
- Presently, MSD has created custom applications for the majority of their data. However, it is difficult to implement or upgrade some of the current applications due to upgrade issues with present and future software.
    - o MSD/LOJIC lost the position of App Developer, which could hinder the prospects of new, creative, and innovative custom applications.
- MSD makes some use of elevation data (contours generated from DEM) but there are likely a range of new applications for DEM data supporting terrain visualization and analysis
- MSD has instituted very good procedures for GIS data update—driven by maintenance reports and construction as-builts. Some MSD work, not documented in accessible form, does not always get into the update workflow and is missed (usually found after the fact).
- Bentley eB engineering document management software with GIS integration is used.
- There is interest in using GIS for capital projects coordination (with other organizations) to coordinate projects involving excavations and repaving.

**External Users**

- As of now, external users must download all data
    - o It would be beneficial to allow access to individual features/layers/shapefiles.
    - o Would LOJIC benefit by allowing network connectivity instead of requiring FTP downloads of data?
    - o Could some basemap data be made available via ArcGIS Online? Specifically data that would not necessarily need to be modified, manipulated, or customized.
- MSD plays a major role in emergency planning and response and coordinates with other organizations to support emergency even planning and event management.

**Internal Operational Concerns**

- There is interest in documenting GIS-related workflow to capture institutional knowledge and support ongoing GIS operations
- The OneWater initiative may result in consolidation of some support services (including IT and GIS) with LWC
- Is proper training in place to prepare individuals for advancement?
- Does LOJIC currently have a plan for upper level staff changes? Specifically relating to data, data management, and future projects.
- There is concern over the quality of data management, as turnover in staff occurs. Will new staff be as focused on quality as original and long term LOJIC staff is?
- Plans are being made for migration to Infor/Hansen v8.3 and move from the current HARP environment for asset/work order management. There is interest in using available GIS integration capabilities of 8.3 but it is important to do this in a way that important functionality of HARP is not lost.
- GIS can play role in MSD efforts for Advanced Asset Management and IAOP (combined sewer overflows)
- Moves toward regional sewer network and drainage issues contribute to interest for access to GIS data outside of Jefferson County.

**Training**
- MSD is currently creating and about to utilize a new staff training program that specifically focuses on GIS. This is a joint initiative with MSD and Esri.
- As of now, GIS training is not mandatory.
  - MSD does not have routine training.
  - Would be beneficial for staff to have mandatory LOJIC, Esri, GIS training bi-monthly. This would allow staff to be up to date on current GIS/Application uses, and give fresh insight to new ideas.
- LOJIC should increase the amount of Esri certified trainers it has in house.
- LOJIC and its' partners need to utilize online training via webinars and Esri virtual classes.

**Ideas for LOJIC**
- LOJIC needs to look into "branding" itself better.
  - The name LOJIC should be utilized in all areas of government, education, and the community. Custom maps, documents, etc. could use the term "Powered by LOJIC" or "The Logical Choice."
  - The LOJIC online maps for the community look antiquated and somewhat outdated. The sleek, uncluttered look of Google Maps, Google Earth, Bing and ArcGIS online draws in more users.
  - LOJIC does have the ability for addressing where other mapping services do not. LOJIC should take advantage of this feature and promote it as the better tool.
- MSD (like Metro Government) is moving ahead with comprehensive Open Data procedures and tools—which may conflict with LOJIC's (and PVA) policies on fees for data and services. LO
  - The appearance of controlling and holding on tight to "their" data is a viable concern.
  - It is the way of the future and communities and organizations are supplying their data in a more open way.
- To support future field/mobile applications, LOJIC should consider developing some standards for mobile applications (software, device types, security)
- LOJIC should consider re-design and implementation of its Web Site.
- As part of Web services enhancement, LOJIC should consider address and street network based location services.
- MSD suggests examination of new Esri tools and services including ArcGIS Online and Story Maps.

# A5. FOCUS GROUP SUMMARY NOTES-LOJIC STAFF

**LOJIC INNOVATIVE GIS BEST PRACTICES PROJECT**
**LOJIC Focus Group Session**
November 13, 2014 1:00pm – 3:30pm

Summary Notes

**Attendees:**

| | | | |
|---|---|---|---|
| Peter Croswell | Croswell-Schulte IT Consultants 502-848-8827 pcroswell@croswell-schulte.com | Scot Taylor | GeoMorphics, Inc. 502-709-5378 scot.taylor@geomorphics.com |
| Chris Glasser | Web Developer 502-540-6544 ghris.glasser@lojic.org | Stan Shelton | Desktop Developer 502-540-6142 stan.shelton@lojic.org |
| Julie Price | LOJIC Applications Administrator 502-540-6122 julie.price@lojic.org | Chris Alldredge | LOJIC Database Administrator 502-540-6372 chris.alldredge@lojic.org |
| Brian Meyers | Web Applications Administrator 502-540-6324 Brian.meyers@lojic.org | | |

**Overview**
This document contains summary notes on key points from the LOJIC Focus Group Session for the LOJIC Innovative GIS best practices project being carried out by the Croswell-Schulte consultant team. The meeting followed the agenda provided to LOJIC participants prior to the meeting. Mr. Croswell gave a brief overview of project background and purpose of the Session, including how it is part of the current LOJIC Strategy Innovation effort. Many of the meeting topics addressed key points and issues identified in the LOJIC Self-Assessment report. LOJIC participants provided an overview of their historical and current use of GIS technical and LOJIC data and services which is substantial.

**Internal Staffing and Operational Concerns**

- LOJIC faces a number staffing challenges.
  - Experienced staff are retiring and/or being taken by outside competition and consultants.
  - There are current vacancies for which LOJIC is following a well structured recruitment process
  - As of now the pay scale for new and current staff seems low compared to outside organizations and companies.
  - MSD is looking into staff pay scale, but it is not perceived as a priority.
  - Developer staff is difficult to acquire due to the LOJIC (MSD) salary ranges for GIS positions. These technical professionals can make more than the current LOJIC salary cap with other employers.

  - The lack of support arose as advocates for LOJIC left or retired from MSD.

- LOJIC needs more staff to keep up with technology, remain an innovator, and keep up with the day to day operations.

- Concern about leadership with GIS technology and innovation
  - With the loss of two system/network staff, it's been difficult to bring in new talent with the required skills who will accept the pay offered
  - When upgrades are required, they are handled by the MSD IT department to make the upgrades. MSD does not view LOJIC requests as a priority and often they are delayed.
    - 5 of MSD's IT staff are contractors and don't have a personal or vested interest in LOJIC. Their offices are not in proximity to MSD.
  - GIS integration with external data and systems requires manpower which LOJIC does not have.
  - A significant amount of Hansen data can be GIS enabled, but MSD and other partners are not utilizing this tool. LOJIC would need staff to create applications to enable this ability. Overall this would be a useful tool.
  - LOJIC staff do not have time to research advances in technology. The majority of time is spent on maintaining and managing current data and infrastructure.
  - LOJIC is MSD's development staff for applications. Of the partners, LWC does not ask for services because they have their own technical department. Metro doesn't ask for application development perceivably because they are not aware of the assets and the value in GIS tools.

- System slowdowns and connecting to the SDE are a common problem. System Upgrades will help alleviate this along with web applications.

- Concerns about internal operations, user support, customer relations
  - Mr. Croswell reviewed responses from LOJIC Internal and External User survey which shows high satisfaction, by users, about the work, products, and services provided by LOJIC. Survey results indicate that LOJIC staff are following a sound customer service ethic
  - As reflected in the LOJIC Self-Assessment, there is a general concern among LOJIC staff that they have become have less connected with users, and, for a number of reasons, less able to be proactive in supporting users, exploring new applications or opportunities, etc.
  - The current financial policy for charging fees (e.g., from Metro) for special services and support (resulting in large part from the current circumstances in which all LOJIC staff costs are covered by MSD) constrains LOJIC staff from being fully responsive or proactive with these users. While assigning costs to special projects is a good way to prioritize projects, there should be more freedom to explore new applications and uses of GIS with users

- Special projects and new technology
  - In general, LOJIC staff are in agreement with the decision to move ahead, at the earliest possible time with a migration to ArcGIS 10.2
  - There was some discussion on the need to explore and begin to adopt new IT and GIS technologies and products—3D visualization and analysis, high-resolution satellite imagery, cloud services
  - There was some discussion about identifying and taking on one or more special projects (new applications and data access). This includes the possibility of a project that has community appeal and visibility—the idea of a GIS-based application for the upcoming Gallopalooza Derby event was cited as a possibility.
  - Create routing for JCPS/TARC busses. Developing a routing application either for online or mobile to track or check on busses may be a helpful resource for the community and Metro. Also may support fuel efficiency for MSD and Metro fleet.

- o Other meaningful special projects, ideally with LOJIC partners, could inject some energy and excitement for LOJIC staff and users.

- Possible LOJIC Web Site Re-design
  - o There is general consensus with a need to carry out a major redesign of the current LOJIC Web Site (which has been in use with minimal design changes for over 5 years). While not mission critical at this time, Web-site redesign—to increase esthetic appeal as well as ease of use and functionality should be considered for the near future.
  - o The look and feel seems outdated and has not kept up to modern coding and technologies. The site is approximately 10 years old and has not been updated or maintained in nearly as long.
  - o The site needs to compatible with mobile devices. LOJIC is falling behind as more of the population and LOJIC users rely and use mobile devices to access the internet and applications.
  - o Potentially, a non-map front end to LOJIC could be designed that would allow people to type in and search based on key questions like "Where do you live?" or "What are you looking for?" – a conversational way to interact with the map.

- There is interest and enough need for LOJIC to open access to the Pictometry data/service now managed and paid for by the PVA.
  - o There is an interest by multiple users (Metro and MSD) for the Pictometry data to support public safety, emergency management, inspections, and other uses but because of licensing restrictions there is no regular access to this source outside of the PVA.
  - o Avenues for modifying licensing terms and financing have been explored but there is no agreement on an approach.
  - o Recent enhancements to Pictometry imagery and tools support higher accuracy photogrammetric functions

- Data projection transformation for Web applications need to be explored—given the problems in real-time fusing of LOJIC data (State Plane) with Web map sources (Web Mercator).

- Geographic Expansion was discussed—possible creation of a "regional data hub" beyond Jefferson County and support provided to Oldham and Bullitt Counties. There are a range of pros and cons to additional expansion—which would not major advantages to current users but which could expand LOJIC's scope and financial support to its advantage and to additional counties possibly interested in a hosted GIS approach.

**External User Issues**
- All the partnering agencies want to upgrade to 10.2. With the prospects of this happening sooner than later LOJIC may want to host training seminars for the partnering agencies.
- LOJIC is seen as excellent service providers. This was shown numerous times in the partnering and external user surveys and in the focus group sessions for external users.

- There is interest in reviving the user group and technical group meetings LOJIC use to have. In the past, there was a lack of attendees and interaction although the feedback given in other focus groups was encouraging and supportive of the meetings.
  - o Rotating who leads or presents during the meetings may help make this a diverse and interactive session.
  - o The meetings should have defined agendas and should publish the agendas ahead of time.

- LOJIC would like to see a centralized GIS in Metro and build internal expertise.
  - o LOJIC staff would need to be enhanced through numbers and expertise to support Enterprise GIS.
  - o A more organized, enterprise GIS organizational structure in Metro (which is being explored) could enhance Metro users' participation as a key part of LOJIC.
  - o Potentially, LOJIC staff support could be allocated to Metro users (with necessary financial arrangements).
  - o Allow independent agencies to become a stakeholder within LOJIC.

- As staff at Metro Safe near retirement, there is concern that data will not become a priority and quality will diminish. Data sets many not continue to be maintained, updated, may become lost over time, and loose the history behind the data source.

- Improvements to metadata requirements are needed. Users have been known to avoid metadata capture standard. LOJIC staff review the metadata before publishing to ensure it's completed properly.
  - o In the past there was a course given to help users understand the value of metadata and this is important
  - o There is the feeling that metadata isn't "Mission Critical," thus people think they can come back to it later and update. LOJIC would like to eliminate this perception.
  - o The stringent requirements or lack of understanding of metadata is preventing valuable and usable data to be put into the LOJIC database.
  - o With users' ability to create new or derived GIS datasets (new Feature Classes) which sometimes have a limited scope and use, LOJIC does not have full authority or practical ability to "enforce" adherence to metadata standards. Croswell brought up the idea of several levels of data categorization with the possibility that for some types of data (not enterprise in nature) would not be subject to all metadata standards.

- Rebranding of LOJIC is needed and can be tied into the redesign of the website
  - o Introduce a new slogan and logo
  - o Publish on multiple websites, venues, and marketing strategies. Ideas may include development of story maps (Galapalooza, Mayors hike, bike, and paddle, Derby)
  - o Present annually at ESRI. Encourage the use of story maps to the participating agencies.
  - o Push the partnering agencies and others to use LOJIC Maps available from the website.

- It's difficult for LOJIC to make use of templates because data is in different formats and would need to be converted. However, being able to take advantage of these tools might be useful. Critical data decisions and planning are needed to determine the best course that is in line with the direction of LOJIC and partnering agencies.

## A6. FOCUS GROUP SUMMARY NOTES-LICENSEES/EXTERNAL USERS 1

**LOJIC INNOVATIVE GIS BEST PRACTICES PROJECT**
**LOJIC Licensees and External Users Focus Group Session 1**
**November 14, 2014 10:30am – 12:30am**

<u>Summary Notes</u>

**Attendees:**

| | | | |
|---|---|---|---|
| Peter Croswell | Croswell-Schulte IT Consultants<br>502-848-8827<br>pcroswell@croswell-schulte.com | Scot Taylor | GeoMorphics, Inc.<br>502-709-5378<br>scot.taylor@geomorphics.com |
| Bruce Herrick | Burgess & Niple<br>502-254-2344<br>bruce.herrick@burgessniple.com | Tom Tri | T&M Associates<br>502-269-3191<br>ttri@tandmassociates.com |
| Ben Hughes | FBI<br>502-263-6321<br>benjamin.huges@ic.fbi.gov | David Hogan | Valbridge Property Advisors<br>502-585-3651<br>dhogan@valbridge.com |
| Suzanne Cheek | Horizon Commercial Realty<br>502-429-0090<br>scheek@hcrky.com | | |

**Overview**
This document contains summary notes on key points from the LOJIC Licensees and External Users Focus Group Session for the LOJIC Innovative GIS best practices project being carried out by the Croswell-Schulte consultant team. The meeting followed the agenda provided to the attendees prior to the meeting. Mr. Croswell gave a brief overview of project background and purpose of the Session, including how it is part of the current LOJIC Strategy Innovation effort. Many of the meeting topics addressed key points and issues identified in the previous focus group meetings. Participants from the engineering field, real estate and FBI provided an overview of their current use of GIS (desktop/online) and LOJIC data and how they acquire it (FTP, License, LOJIC Online).

**GIS Data Needs**
- There was a consensus between the real estate and appraisers that property centric data on the LOJIC map would be a welcomed feature.
- Advanced property address attributes would be beneficial.
  - o Introduction of an address standard application to validate addresses
  - o Apartment units do not have unique addresses
  - o Vacant properties are not always linked to the address layer. But could depend on what the definition of "vacant" is (temporary, permanent, abandoned).
- Is it in LOJIC's interest to have orthoimagery updated on yearly basis?
  - o The 3 year update is sometimes too long due to all the development within and around the city.
  - o Purchase new high-resolution Satellite imagery yearly then fly aerial every 5 years to offset the cost.

  - o Possibly have two types of ortho data, one for public use (lower resolution and/or older). One for Professional use (updated more frequently, higher resolution.)
  - o Pictometry seems to be more up to date
- Better integration at the structural level, not just the parcel level.
  - o Data is not linked to specific buildings.
  - o A single building (as shown on planimetric map layer) may span across multiple parcels. It's sometimes classified as one building, but it's actually different properties/owners.
- There was great interest in LOJIC acquiring regional data from surrounding counties
  - o Oldham, Bullitt, Spencer and Hardin counties should be the primary focus
  - o Realty needs currently exceed private needs
  - o Possible barter with surrounding counties to acquire data with either sharing data, revenue sharing or subscriptions.
- Is it possible for LOJIC to encourage or host/create a statewide parcel layer (would require leadership by Revenue Cabinet and County PVAs)
  - o The real-estate community would be willing to pay for more regional/statewide data.
- FBI would find it useful to have access to Metro crime data.

**LOJIC Online**
- The LOJIC map does not seem to be working properly on all browsers, specifically Firefox. If this due to coding, or Internet Explorer requirements, could there be a note about external add-ons for Firefox such as IE tab.
- Have an attribute or turn on to view the location of water quality treatment centers.
  - o Specifically vacant/for sale properties
  - o Would a property owner be able to connect or is the treatment center full?
- There was expressed interest from all attendees to have a single source for LOJIC and PVA data.
  - o In the past PVA data was accessible on the LOJIC system.
  - o There seems to be more errors on the PVA side compared to the LOJIC side.
- Could the current measure tool be redeveloped or have advanced features to allow for aggregate data based on polygon?
- Would like a tool to allow delineation of a polygon and calculate counts/areas of features inside the polygon (polygon aggregation tool).
- Would LOJIC be willing to allow export data to KML files for use with Google Earth?
- The ability to save a firmette style map of the current view extent would be a helpful feature to produce LOJIC maps on the user end on the fly.
- Requested additional tools
  - o Geo processing
  - o Routing (incorporate with trimarc data)
  - o Traffic
  - o Dynamic TARC routes/times (updated near real-time)

**LOJIC Website**
- The website looks old and outdated.
  - Text heavy and too busy
  - If a new site is created, have a link to the old site for those accustomed to using it
- The Online LOJIC Map Catalog was not known by most of the attendees.
  - Could a link be added on the splash page?  Possible "Free PDF Maps"
  - The current link under "products" makes it appear these are for a fee.
  - Clarify on the site how often the maps are updated
  - Can all the PDF's be dynamic/smart PDF's?  The ability to turn on/off layers within ADOBE.
- Continue publishing the Street Atlas, but update.  The current version is 2011.
- Does LOJIC provide data in CAD format?

**Technology Trends and Tools**
- Crowd sourcing would be an interesting concept, but have to be cautious.
  - Concern from going general to even more general
- Location Based Services (restaurants, attractions, events, etc.)
  - How could LOJIC make this competitive compared BING and Google Maps?
- A location for users to either the data or LOJIC Map to record/repot data discrepancies

**LOJIC Customer Service**

- Expand marketing/branding "What LOJIC can do for you!"
- When LOJIC holds training, is it possible to record these for future on demand webinars?
- There is an interest in more instructor led courses, specifically on tools and ways to analyze data.
  - 
- The creation of a Monthly LOJIC Newsletter
  - Sent to all external users
  - Upcoming training events (one month notice)
  - Emailed/Printed and mailed
  - Feature an article on what interesting way an external user is applying LOJIC data

LOJIC Focus Group Summary Notes-Licensees/External Users 1                    p. 3

# A7. FOCUS GROUP SUMMARY NOTES-LICENSEES/EXTERNAL USERS 2

**LOJIC INNOVATIVE GIS BEST PRACTICES PROJECT**
**LOJIC Licensees and External Users Focus Group Session 2**
**November 14, 2014 2:00pm – 4:00pm**

Summary Notes

**Attendees:**

| | | | |
|---|---|---|---|
| Peter Croswell | Croswell-Schulte IT Consultants<br>502-848-8827<br>pcroswell@croswell-schulte.com | Scot Taylor | GeoMorphics, Inc.<br>502-709-5378<br>scot.taylor@geomorphics.com |
| Stephen Rusie | City of Jeffersontown<br>502-267-8333 | Jarod McNeil | Minecraft Louisville<br>502-544-8187 |
| Casey Deyoung | Heritage Engineering<br>502-562-1412<br>cdeyoung@heritageeng.com | Josh Poe | TARC<br>502-544-3834<br>jpoe@ridetarc.org |
| Jeana Dunlap | Develop Louisville<br>502-574-2322<br>jeana.dunlap@louisvilleky.gov | Tonya Wise | Louisville Metro Housing Authority<br>502-569-4385<br>wise@lmha.org |
| Natalie Gernert | JCPS<br>502-485-3919<br>natalie.gernert@<br>jefferson.kyschools.us | | |

**Overview**
This document contains summary notes on key points from the LOJIC Licensees and External Users Focus Group Session for the LOJIC Innovative GIS best practices project being carried out by the Croswell-Schulte consultant team. The meeting followed the agenda provided to the attendees prior to the meeting. Mr. Croswell gave a brief overview of project background and purpose of the Session, including how it is part of the current LOJIC Strategy Innovation effort. Many of the meeting topics addressed key points and issues identified in the previous focus group meetings. Participants from the engineering field, real estate, Louisville Metro Housing Authority, JCPS, TARC, Develop Louisville, Minecraft Louisville and Jeffersontown provided an overview of their current use of GIS (desktop/online) and LOJIC data and how they acquire it (FTP, License, LOJIC Online).

**GIS Data Needs**
- The engineers find a need for planimetric and impervious data
- Can LOJIC provide access to utility data not currently available on-line (LWC water distribution and LG&E utilities). It was noted that there may be "critical infrastructure" concerns dictating restrictions on access.
- Sewer modeling CSOs

- Building elevation database for all buildings. PVA/FIRM data to calculate basement elevations
- Planimetric features (buildings) in central urban area show outlines of multiple buildings when they abut but no lines designating separate ownership

- Can MSD's Hansen data be provided/converted into Shapefiles? Useful for a number of applications including Housing Authority analysis
- Some participants indicated major use of contour lines. Some discussion about the possible expanded use of digital elevation model data.
- Can LOJIC acquire or partner with various organizations to acquire a tree canopy layer?
  - The current vegetation layer doesn't take into account individual trees.
  - How useful is the Inventory of Trees / Tree Counter from the office of sustainability? Can this become a useable LOJIC data file?
- TARC has its' own routing software called Trapeze, can this data be acquired by LOJIC?
  - Routes for Jefferson, Bullitt, Floyd counties in Kentucky and Clark County, Indiana.
- Access to KIPDA data would be beneficial—particularly traffic volume information
- Interest in integrated access, through LOJIC, to all real-property data available through the PVA subscription service. These services are not integrated which increases time requirements to perform real property data queries.

**LOJIC Online Data and Functionality**
- Users indicated frequent use of the LOJIC Online Map.
- There was a request to have the property/parcel lines turned off by default as you zoom to a specific scale.
  - Creates a cluttered/busy look to the map as you zoom into the street/neighborhood
- Can a compass rose be added to the LOJIC online map?
  - Make this a dynamic compass where it can control map movement.
- Is it possible to incorporate the ability to highlight, copy and paste areas of a map into external programs such as word, excel, etc.?
- Have the option for the user to set the scale of the map.  Currently the map has pre-defined scales while zooming in and out.
- There was concern that when exporting into a PDF the quality of the map diminishes
- The Help button on the top of the map leads to the LOJIC site, and not help or how to use the LOJIC online map.
  - Include how right clicking brings up three additional options; buffer locations, location reports, X/Y Coordinate
- Incorporate the PVA data into the LOJIC map
  - More layers are in the LOJIC online map compared to the PVA map viewer
  - LOJIC online doesn't have PVA's names and owners listed (privacy issues?)
  - Deed book/page/reference – there is a feel of juggling too many windows to acquire the data the user wants
- Currently the contours are pre-defined and labeled.  Could LOJIC allow the intervals of the contours and labels be user defined?  Allow the user to set the contour levels. Not just 2' or 10' intervals
- Scale Thesholds for map display. Sometimes large areas are required, but the layer threshold prevent certain features from displaying at desired zoom level
- Can detailed sewer data be acquired via LOJIC online or is this a security issue?
  - There was expression of an overreaction to 9/11 security issues as it relates to GIS data and what is viewable by the public.
- Sewer capacity and which service plant lines were connected to was requested by Jeffersontown to be included in the LOJIC Online map
- There are a few issues with the print button on the LOJIC online map.
  - The application doesn't produce a Legend (even on the basic level).
  - Include a text pop-up box to include a title on the map.

LOJIC Focus Group Summary Notes-Licensees/External Users 2                    p. 1

LOJIC Focus Group Summary Notes-Licensees/External Users 2                    p. 2

**LOJIC Website**
- There was a consensus that the LOJIC site looks old and outdated and needs to be updated.
- If LOJIC can track what links are accessed the most, use the results to re-design the site around those links/resources.
- The "Popular Interactive Maps" should be links across the top of the page to stand out. The majority of people browsing sites look for menu's/links on the side or top of pages.
- The current LOJIC site looks text heavy, and LOJIC should focus the text on highlights of what they provide. Allow the users to follow links for more detailed information.

**Technology Trends and Tools**
- Can a Louisville Water Company tool be included either online or via the Citrix connection to connect to limited LWC data?
  - Identify and display generic service line locations, size and shape are not important.
  - Allow the user to create a purchase order of more detailed LWC owned data via the tool.
  - This same tool would be beneficial for LG&E data as well.
- Would it be feasible for LOJIC to create a separate LOJIC Online map for subscribers and license holders to have advanced features?
  - Assign unique access codes to those that have access to LOJIC data.
  - Provide the ability to select layers and download.
  - Allow the GUI to clip the layers to the view extent, and allow purchasable data from the GUI.
  - Allowing some advanced features would be acquiring data would be easier than calling or emailing to order specific data sets.
- Mobile use of the site/online map is important. LOJIC needs to modernize and make accessible mobile versions the site and tools.

**LOJIC Customer Service**

- The response to LOJIC's customer service was nothing but praises.
  - Always fast reply to emails and quick online responses
  - LOJIC staff is always helpful, professional and kind.
- LOJIC provides adequate training, but the marketing of the training isn't sufficient.
- Is it possible to have LOJIC partner with those outside the organization to develop and create requested applications?
- If LOJIC reduced the fee structure for its data and license, would they see an increase of users and data requests?
  - Charge for the most sought after data.
  - People are always willing to pay for quality data.
- There currently is a push for Open Data, Can LOJIC reverse the way they charge for data?
  - Charge users to submit data into the LOJIC database. This would help insure quality.
  - Charging on the front end could decrease the cost to the users of LOJIC data, making it more affordable to more users.

# APPENDIX B: DETAILS OF URISA GIS CAPABILITY MATURITY MODEL ASSESSMENT

## GIS MANAGEMENT INSTITUTE® -GIS CAPABILITY MATURITY MODEL©

## ASSESSMENT OF THE LOUISVILLE AND JEFFERSON COUNTY INFORMATION CONSORTIUM (LOJIC)

GREG BABINSKI AND PETER CROSWELL
DECEMBER 19, 2014

### Introduction

The URISA GIS Capability Maturity Model© (GISCMM) is a key component of the GIS Management Institute®. Its primary purpose is to provide a model of a capable and mature enterprise GIS operation within a designated organization. See http://www.urisa.org/clientuploads/directory/GMI/GISCMM-Final201309%28Endorsed%20for%20Publication%29.pdf for more details.

Many entities – primarily government agencies, but increasingly also private business and industry – utilize an enterprise geographic information system (GIS) to enhance the effectiveness of their operations and to provide a financial return on investment.  URISA – the Urban and Regional Information Systems Association – has been at the forefront of the development of government and business applications of GIS for almost 50 years. Many new government and business services are only possible because of the use of geospatial technology. Recently, studies have shown that GIS use can also deliver significant return on investment (ROI) for agencies that deploy geospatial technology. Annual ROI rates of 10:1 or more have been documented.

But within the field of GIS management key questions remain. What are the characteristics of a capable enterprise GIS? What are the characteristics of a well-managed enterprise GIS?  The URISA GIS Capability Maturity Model is designed to provide a framework for addressing these questions.

### Applying the GIS Capability Maturity Model to LOJIC

This assessment of LOJIC and its coordination with partner organizations of includes scores and comments for individual GISCMM components for the two main sections: a) Enabling Components which are the aspects of a GIS that are purchased, developed, acquired, or otherwise form the assets of the GIS and b) Execution Ability which the aspects of a GIS that relate to the process maturity of the management and staff responsible for operating a GIS

Enabling Capability components of the GISCMM focus on the resources and cost side of GIS. The Execution Ability portion of the model relates to the benefits that the GIS can deliver for the agency or agencies that the GIS serves. It is important to remember that while the costs to develop and operate a GIS may seem large, because they require expenditure scarce funds, ROI from GIS comes from business users applying GIS tools and resources in their daily work. Execution ability improvements usually have small costs, but can deliver significant increases in return on investment (ROI).

This LOJIC assessment was performed by the Croswell-Schulte team with the oversight and guidance of team member Greg Babinski who is the leader of the URISA GIS Management Institute and the primary author of the GISCMM. The GISCMM assessment for LOJIC relied on information provided by the LOJIC SI Team (self assessments, internal and external surveys), meetings and Focus Group sessions with LOJIC staff and partner organizations, and the review of many background documents provided by LOJIC and partner organizations.

## Enabling Capability Components

For each question in the 'Enabling Capability' section, read the brief description.  Check the implementation category

[  ] **1.00 Fully implemented**

[  ] **0.80 In progress with full resources available to achieve the capability**

[  ] **0.60 In progress but with only partial resources available to achieve the capability**

[  ] **0.40 Planned and with resources available to achieve the capability**

[  ] **0.20 Planned but with no resources available to achieve the capability**

[  ] **0.00 This is desired, but is not planned**

[ ] **Not Applicable (This is a non-numeric response that requires an explanation of why this component should not be considered in assessing the operation.)**

## Execution Ability Components

For each question in the 'Execution Ability' section, read the brief question and description.  Check the implementation category that best describes your agency's current status.  Feel free to include any clarifying comments or questions.

[  ] **Level Five:  Optimized processes**

[  ] **Level Four:  Managed and measured processes**

[  ] **Level Three:  Defined processes**

[  ] **Level Two:  Repeatable processes**

[  ] **Level One:  Ad-hoc processes**

**Comments:**

**ENABLING CAPABILITY COMPONENT SCORING:**

| Enabling Capability (EC) Component | Model Characteristics | Preliminary LOJIC Assessment | LOJIC Assessment Comments and Documentation Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component? |
|---|---|---|---|
| **EC1.a  Framework GIS Data[1]** <br> **Geodetic Control** | Does the agency have access to adequate framework GIS data to meet its business needs? For the **GISCMM**, framework data corresponds to jurisdiction-wide common base layers as defined by the agency to meet its business needs. For reference, refer to the NSDI framework data layers (see http://www.fgdc.gov/framework/). See also EC2, below) | **Preliminary Assessment** <br> **[X]** 1.00 Fully implemented <br> [ ] 0.80 In progress with full resources available to achieve the capability <br> [ ] 0.60 In progress but with only partial resources available to achieve the capability <br> [ ] 0.40 Planned and with resources available to achieve the capability <br> [ ] 0.20 Planned but with no resources available to achieve the capability <br> [ ] 0.00 This desired, but is not planned <br> [ ] Not applicable (explanation required) | Geodetic control in place with data on location and characteristics of physical monuments. Coverage for Jefferson, Oldham, Bullitt Counties. Accessible by all LOJIC partners, licensees, and online map users. |
| **EC1.b  Framework GIS Data[1]** <br> **Cadastral** | Does the agency have access to adequate framework GIS data to meet its business needs? For the GISCMM, framework data corresponds to jurisdiction-wide common base layers as defined by the agency to meet its business needs. For reference, refer to the NSDI framework data layers (see http://www.fgdc.gov/framework/). See also EC2, below) | **Preliminary Assessment** <br> **[X]** 1.00 Fully implemented <br> [ ] 0.80 In progress with full resources available to achieve the capability <br> [ ] 0.60 In progress but with only partial resources available to achieve the capability <br> [ ] 0.40 Planned and with resources available to achieve the capability <br> [ ] 0.20 Planned but with no resources available to achieve the capability <br> [ ] 0.00 This desired, but is not planned <br> [ ] Not applicable (explanation required) | Parcel mapping and attribute data for Jefferson County updated continuously by PVA. Attribute data transferred to LOJIC on weekly basis—to change soon to daily schedule. Accessible by all LOJIC partners, licensees, and online map users. |
| **EC1.c  Framework GIS Data[1]** <br> **Orthoimagery** | Does the agency have access to adequate framework GIS data to meet its business needs? For the GISCMM, framework data corresponds to jurisdiction-wide common base layers as defined by the agency to meet its business needs. For reference, refer to the NSDI framework data layers (see http://www.fgdc.gov/framework/). See also EC2, below) | **Preliminary Assessment** <br> **[X]** 1.00 Fully implemented <br> [ ] 0.80 In progress with full resources available to achieve the capability <br> [ ] 0.60 In progress but with only partial resources available to achieve the capability <br> [ ] 0.40 Planned and with resources available to achieve the capability <br> [ ] 0.20 Planned but with no resources available to achieve the capability <br> [ ] 0.00 This desired, but is not planned <br> [ ] Not applicable (explanation required) | Available for Jefferson, Oldham, Bullitt Counties. Regularly updated on approximate 3-year cycle (6-inch resolution, color). Planned reflight in 2016. Accessible by all LOJIC partners, licensees, and online map users. |

| Enabling Capability (EC) Component | Model Characteristics | Preliminary LOJIC Assessment | **LOJIC Assessment Comments and Documentation** Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component? |
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| **EC1.d Framework GIS Data[1] Elevation** | Does the agency have access to adequate framework GIS data to meet its business needs? For the GISCMM, framework data corresponds to jurisdiction-wide common base layers as defined by the agency to meet its business needs. For reference, refer to the NSDI framework data layers (see http://www.fgdc.gov/framework/). See also EC2, below) | **Preliminary Assessment** [X] 1.00 Fully implemented [ ] 0.80 In progress with full resources available to achieve the capability [ ] 0.60 In progress but with only partial resources available to achieve the capability [ ] 0.40 Planned and with resources available to achieve the capability [ ] 0.20 Planned but with no resources available to achieve the capability [ ] 0.00 This desired, but is not planned [ ] Not applicable (explanation required) | Available for Jefferson, Oldham, Bullitt Counties. Regularly updated on approximate 3-year cycle (LiDAR) and generation of DEM and contours Planned reflight in 2016. Accessible by all LOJIC partners, licensees, and online map users. |
| **EC1.e Framework GIS Data[1] Hydrography** | Does the agency have access to adequate framework GIS data to meet its business needs? For the GISCMM, framework data corresponds to jurisdiction-wide common base layers as defined by the agency to meet its business needs. For reference, refer to the NSDI framework data layers (see http://www.fgdc.gov/framework/). See also EC2, below) | **Preliminary Assessment** [X] 1.00 Fully implemented [ ] 0.80 In progress with full resources available to achieve the capability [ ] 0.60 In progress but with only partial resources available to achieve the capability [ ] 0.40 Planned and with resources available to achieve the capability [ ] 0.20 Planned but with no resources available to achieve the capability [ ] 0.00 This desired, but is not planned [ ] Not applicable (explanation required) | Mapping of natural drainage lines (USGS blueline streams). For Jefferson County, MSD maintains storm channel data. Accessible by all LOJIC partners, licensees, and online map users. |
| **EC1.f Framework GIS Data[1] Administrative Units** | Does the agency have access to adequate framework GIS data to meet its business needs? For the GISCMM, framework data corresponds to jurisdiction-wide common base layers as defined by the agency to meet its business needs. For reference, refer to the NSDI framework data layers (see http://www.fgdc.gov/framework/). See also EC2, below) | **Preliminary Assessment** [X] 1.00 Fully implemented [ ] 0.80 In progress with full resources available to achieve the capability [ ] 0.60 In progress but with only partial resources available to achieve the capability [ ] 0.40 Planned and with resources available to achieve the capability [ ] 0.20 Planned but with no resources available to achieve the capability [ ] 0.00 This desired, but is not planned [ ] Not applicable (explanation required) | Political and administrative boundaries maintained by LOJIC partners and licensees for Jefferson, Oldham, and Bullitt Counties. Accessible by all LOJIC partners, licensees, and online map users. |

| Enabling Capability (EC) Component | Model Characteristics | Preliminary LOJIC Assessment | LOJIC Assessment Comments and Documentation<br>Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component? |
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| **EC1.g Framework GIS Data[1]** <br>**Transportation** | Does the agency have access to adequate framework GIS data to meet its business needs? For the GISCMM, framework data corresponds to jurisdiction-wide common base layers as defined by the agency to meet its business needs.<br>For reference, refer to the NSDI framework data layers (see http://www.fgdc.gov/framework/).<br>See also EC2, below) | **Preliminary Assessment**<br>**[X]** 1.00 Fully implemented<br>[ ] 0.80 In progress with full resources available to achieve the capability<br>[ ] 0.60 In progress but with only partial resources available to achieve the capability<br>[ ] 0.40 Planned and with resources available to achieve the capability<br>[ ] 0.20 Planned but with no resources available to achieve the capability<br>[ ] 0.00 This desired, but is not planned<br>[ ] Not applicable (explanation required) | Street centerlines with addresses maintained by LOJIC partner Louisville Metro for Jefferson County and by Oldham and Bullitt Counties. For Jefferson County, data on bike lanes and public transit maintained Accessible by all LOJIC partners, licensees, and online map users. |
| **EC1.h Framework GIS Data[1]** <br>**Planimetric** | Does the agency have access to adequate business data (non-framework GIS data) to meet its business needs?<br>• Need for data based on agency business needs, therefore this data will vary from agency to agency; specific business data layers will not be comparable from agency to agency<br>• Agency completing the assessment should name at least 5 but no more than 10 business data types. These business data layers should also be assessed under EC4, below. | **Preliminary Assessment**<br>**[X]** 1.00 Fully implemented<br>[ ] 0.80 In progress with full resources available to achieve the capability<br>[ ] 0.60 In progress but with only partial resources available to achieve the capability<br>[ ] 0.40 Planned and with resources available to achieve the capability<br>[ ] 0.20 Planned but with no resources available to achieve the capability<br>[ ] 0.00 This desired, but is not planned<br>[ ] Not applicable (explanation required) | Detailed photogrammetrically compiled planimetric mapping (buildings, structures, paved areas) regularly updated with re-flights and orthoimage compilation on 3-year cycles for Jefferson, Oldham, and Bullitt Counties. Used as base map reference, support for MSD impervious surface calculations, PVA property appraisal, etc. Accessible by all LOJIC partners, licensees, and online map users. |
| **EC1.i Framework GIS Data[1]** <br>**Site Address** | Does the agency have access to adequate business data (non-framework GIS data) to meet its business needs?<br>• Need for data based on agency business needs, therefore this data will vary from agency to agency; specific business data layers will not be comparable from agency to agency<br>• Agency completing the assessment should name at least 5 but no more than 10 business data types. These business data layers should also be assessed under EC4, below. | **Preliminary Assessment**<br>**[X]** 1.00 Fully implemented<br>[ ] 0.80 In progress with full resources available to achieve the capability<br>[ ] 0.60 In progress but with only partial resources available to achieve the capability<br>[ ] 0.40 Planned and with resources available to achieve the capability<br>[ ] 0.20 Planned but with no resources available to achieve the capability<br>[ ] 0.00 This desired, but is not planned<br>[ ] Not applicable (explanation required) | Site addresses Maintained by Louisville Metro and accessible by all LOJIC partners, licensees, and online map users. |

| Enabling Capability (EC) Component | Model Characteristics | Preliminary LOJIC Assessment | LOJIC Assessment Comments and Documentation Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component? |
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| **EC2.a Framework GIS Data[1] Maintenance** <u>**Geodetic Control**</u> | Are data stewards defined for each framework GIS data layer and the data is maintained (kept up to date) to meet business needs?<br>• Refer to EC6 for description of the ideal data environment.<br>• There could very likely be multiple stewards<br>• The Enterprise GIS responsibility is that there are no gaps in coverage<br>• In performing the assessment, every framework component should be covered | **Preliminary Assessment**<br>**[X ]** 1.00 Fully implemented<br>**[ ]** 0.80 In progress with full resources available to achieve the capability<br>**[ ]** 0.60 In progress but with only partial resources available to achieve the capability<br>**[ ]** 0.40 Planned and with resources available to achieve the capability<br>**[ ]** 0.20 Planned but with no resources available to achieve the capability<br>**[ ]** 0.00 This desired, but is not planned<br>**[ ]** Not applicable (explanation required)<br>**Cannot Assess based on limited information** | LOJIC is responsible for maintenance. |
| **EC2.b Framework GIS Data[1] Maintenance** <u>**Cadastral**</u> | Are data stewards defined for each framework GIS data layer and the data is maintained (kept up to date) to meet business needs?<br>• Refer to EC6 for description of the ideal data environment.<br>• There could very likely be multiple stewards<br>• The Enterprise GIS responsibility is that there are no gaps in coverage<br>• In performing the assessment, every framework component should be covered | **Preliminary Assessment**<br>**[X]** 1.00 Fully implemented<br>**[ ]** 0.80 In progress with full resources available to achieve the capability<br>**[ ]** 0.60 In progress but with only partial resources available to achieve the capability<br>**[ ]** 0.40 Planned and with resources available to achieve the capability<br>**[ ]** 0.20 Planned but with no resources available to achieve the capability<br>**[ ]** 0.00 This desired, but is not planned<br>**[ ]** Not applicable (explanation required) | PVA is responsible and has process for ongoing update based on property transfers, parcel splits and mergers, and subdivisions. Updates real property attribute data based on information from building permits, aerial imagery, owner information submittals on property improvements, and field appraisals. |
| **EC2.c Framework GIS Data[1] Maintenance** <u>**Orthoimagery**</u> | Are data stewards defined for each framework GIS data layer and the data is maintained (kept up to date) to meet business needs?<br>• Refer to EC6 for description of the ideal data environment.<br>• There could very likely be multiple stewards<br>• The Enterprise GIS responsibility is that there are no gaps in coverage<br>• In performing the assessment, every framework component should be covered | **Preliminary Assessment**<br>**[X]** 1.00 Fully implemented<br>**[ ]** 0.80 In progress with full resources available to achieve the capability<br>**[ ]** 0.60 In progress but with only partial resources available to achieve the capability<br>**[ ]** 0.40 Planned and with resources available to achieve the capability<br>**[ ]** 0.20 Planned but with no resources available to achieve the capability<br>**[ ]** 0.00 This desired, but is not planned<br>**[ ]** Not applicable (explanation required) | LOJIC is responsible—recompiles orthoimagery for Jefferson County on behalf of LOJIC partners and for Oldham and Bullitt Counties through agreements. Re-flights on approximate 3-year cycle. |

| Enabling Capability (EC) Component | Model Characteristics | Preliminary LOJIC Assessment | LOJIC Assessment Comments and Documentation<br>Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component? |
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| **EC2.d Framework GIS Data[1] Maintenance Elevation** | Are data stewards defined for each framework GIS data layer and the data is maintained (kept up to date) to meet business needs?<br>• Refer to EC6 for description of the ideal data environment.<br>• There could very likely be multiple stewards<br>• The Enterprise GIS responsibility is that there are no gaps in coverage<br>• In performing the assessment, every framework component should be covered | **Preliminary Assessment**<br>**[X]** 1.00 Fully implemented<br>[ ] 0.80 In progress with full resources available to achieve the capability<br>[ ] 0.60 In progress but with only partial resources available to achieve the capability<br>[ ] 0.40 Planned and with resources available to achieve the capability<br>[ ] 0.20 Planned but with no resources available to achieve the capability<br>[ ] 0.00 This desired, but is not planned<br>[ ] Not applicable (explanation required) | LOJIC is responsible. LOJIC is responsible—recompiles LiDAR data for Jefferson County on behalf of LOJIC partners and for Oldham and Bullitt Counties through agreements. Re-flights on approximate 3-year cycle. Contract services used to process LiDAR data and generation of DEM and contours. |
| **EC2.e Framework GIS Data[1] Maintenance Hydrography** | Are data stewards defined for each framework GIS data layer and the data is maintained (kept up to date) to meet business needs?<br>• Refer to EC6 for description of the ideal data environment.<br>• There could very likely be multiple stewards<br>• The Enterprise GIS responsibility is that there are no gaps in coverage<br>• In performing the assessment, every framework component should be covered | **Preliminary Assessment**<br>[ ] 1.00 Fully implemented<br>**[X]** 0.80 In progress with full resources available to achieve the capability<br>[ ] 0.60 In progress but with only partial resources available to achieve the capability<br>[ ] 0.40 Planned and with resources available to achieve the capability<br>[ ] 0.20 Planned but with no resources available to achieve the capability<br>[ ] 0.00 This desired, but is not planned<br>[ ] Not applicable (explanation required) | Original USGS Blueline Stream delineation not updated but MSD updates open storm channel data. NOTE: Natural drainage lines do not require frequent update. Could be semi-automated from use of DEM data. |
| **EC2.f Framework GIS Data[1] Maintenance Administrative Units** | Are data stewards defined for each framework GIS data layer and the data is maintained (kept up to date) to meet business needs?<br>• Refer to EC6 for description of the ideal data environment.<br>• There could very likely be multiple stewards<br>• The Enterprise GIS responsibility is that there are no gaps in coverage<br>• In performing the assessment, every framework component should be covered | **Preliminary Assessment**<br>**[X]** 1.00 Fully implemented<br>[ ] 0.80 In progress with full resources available to achieve the capability<br>[ ] 0.60 In progress but with only partial resources available to achieve the capability<br>[ ] 0.40 Planned and with resources available to achieve the capability<br>[ ] 0.20 Planned but with no resources available to achieve the capability<br>[ ] 0.00 This desired, but is not planned<br>[ ] Not applicable (explanation required) | LOJIC coordinates with multiple LOJIC partners and with other data providers to keep data updated. Includes political jurisdictions (County, City boundaries), election-related districts, and a range of administrative areas used by different organizations. |

| Enabling Capability (EC) Component | Model Characteristics | Preliminary LOJIC Assessment | LOJIC Assessment Comments and Documentation Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component? |
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| EC2.g Framework GIS Data[1] Maintenance **Transportation** | Are data stewards defined for each framework GIS data layer and the data is maintained (kept up to date) to meet business needs? • Refer to EC6 for description of the ideal data environment. • There could very likely be multiple stewards • The Enterprise GIS responsibility is that there are no gaps in coverage • In performing the assessment, every framework component should be covered | **Preliminary Assessment** [X] 1.00 Fully implemented [ ] 0.80 In progress with full resources available to achieve the capability [X] 0.60 In progress but with only partial resources available to achieve the capability [ ] 0.40 Planned and with resources available to achieve the capability [ ] 0.20 Planned but with no resources available to achieve the capability [ ] 0.00 This desired, but is not planned [ ] Not applicable (explanation required) | Louisville Metro has main responsibility for updating street centerline network and related data layers. |
| EC2.h Framework GIS Data[1] Maintenance **Planimetric** | Does the agency have data stewards defined for each business GIS data layer and is the data is maintained (kept up to date) to meet business needs? • Also refer to EC3 above for business • Refer to EC7 below, for ideal data environment | **Preliminary Assessment** [X] 1.00 Fully implemented [ ] 0.80 In progress with full resources available to achieve the capability [ ] 0.60 In progress but with only partial resources available to achieve the capability [ ] 0.40 Planned and with resources available to achieve the capability [ ] 0.20 Planned but with no resources available to achieve the capability [ ] 0.00 This desired, but is not planned [ ] Not applicable (explanation required) | Maintained by LOJIC—through contracted services or in-house updates (see EC3.a). |
| EC2.i Framework GIS Data[1] Maintenance **Site Address** | Does the agency have data stewards defined for each business GIS data layer and is the data is maintained (kept up to date) to meet business needs? • Also refer to EC3 above for business • Refer to EC7 below, for ideal data environment | **Preliminary Assessment** [X] 1.00 Fully implemented [ ] 0.80 In progress with full resources available to achieve the capability [ ] 0.60 In progress but with only partial resources available to achieve the capability [ ] 0.40 Planned and with resources available to achieve the capability [ ] 0.20 Planned but with no resources available to achieve the capability [ ] 0.00 This desired, but is not planned [ ] Not applicable (explanation required) | Maintained by Louisville Metro |

| Enabling Capability (EC) Component | Model Characteristics | Preliminary LOJIC Assessment | LOJIC Assessment Comments and Documentation Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component? |
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| EC3.  Business GIS Data[2] | Does the agency have access to adequate business data (non-framework GIS data) to meet its business needs?<br>• Need for data based on agency business needs, therefore this data will vary from agency to agency; specific business data layers will not be comparable from agency to agency<br>• Agency completing the assessment should name at least 5 but no more than 10 business data types. These business data layers should also be assessed under EC4, below. | **Preliminary Assessment**<br>**[ ]** 1.00 Fully implemented<br>**[X]** 0.80 In progress with full resources available to achieve the capability<br>**[ ]** 0.60 In progress but with only partial resources available to achieve the capability<br>**[ ]** 0.40 Planned and with resources available to achieve the capability<br>**[ ]** 0.20 Planned but with no resources available to achieve the capability<br>**[ ]** 0.00 This desired, but is not planned<br>**[ ]** Not applicable (explanation required) | Very rich GIS database with over 800 base map (Framework) and business (thematic) GOS data layers for Jefferson County are maintained on LOJIC servers and maintained by LOJIC and its partner organizations. Business (Thematic) data cover a broad range of topics and business needs for users including a) land use planning and zoning, b) utilities, c) environmental, d) public safety and emergency planning/services, e) environmental and protected areas, f) cultural/historic, g) floodplain, i) specific incident data<br><br>Some additional data needs for Jefferson County users identified but not fully available to users:<br>a) tree canopy/inventory data<br>b) utility infrastructure (MSD updates sanitary and storm sewer data and LWC has water transmission distribution data but other utility infrastructure data not available to GIS users through LOJIC services)<br>c) detailed real property information not available directly from LOJIC—requires separate subscription with PVA |
| EC4  Business GIS Data[2] Maintenance | Does the agency have data stewards defined for each business GIS data layer and is the data is maintained (kept up to date) to meet business needs?<br>• Also refer to EC3 above for business<br>• Refer to EC7 below, for ideal data environment | **Preliminary Assessment**<br>**[X]** 1.00 Fully implemented<br>**[ ]** 0.80 In progress with full resources available to achieve the capability<br>**[ ]** 0.60 In progress but with only partial resources available to achieve the capability<br>**[ ]** 0.40 Planned and with resources available to achieve the capability<br>**[ ]** 0.20 Planned but with no resources available to achieve the capability<br>**[ ]** 0.00 This desired, but is not planned<br>**[ ]** Not applicable (explanation required) | Maintained by Louisville Metro |

| Enabling Capability (EC) Component | Model Characteristics | Preliminary LOJIC Assessment | LOJIC Assessment Comments and Documentation<br>Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component? |
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| **EC5. GIS Data Coordination** | Is there an enterprise GIS data coordination function and/or committee to rationalize framework and business GIS data development, access, and maintenance?<br>• This could be a function of a GIO (chief geographic information officer), a governance function, or an enterprise GIS office function, depending on desired level of formality or institutionalization. | **Preliminary Assessment**<br>[ ] 1.00 Fully implemented<br>[ X] 0.80 In progress with full resources available to achieve the capability<br>[ ] 0.60 In progress but with only partial resources available to achieve the capability<br>[ ] 0.40 Planned and with resources available to achieve the capability<br>[ ] 0.20 Planned but with no resources available to achieve the capability<br>[ ] 0.00 This desired, but is not planned<br>[ ] Not applicable (explanation required) | The LOJIC Manager and staff play this role for LOJIC partners and external users. Includes definition of data content, format, and quality standards and coordinate data maintenance and access. Previous Technical Committee (with representation from all partner organizations) is now inactive. In a few cases, there are improvements needed to clarify and assign roles for maintenance of data layers and coordination with LOJIC for update and posting for access. |
| **EC6. Metadata** | Is metadata available and maintained for all framework and business data layers?<br>• Is there a rationale for accepting any data without metadata? | **Preliminary Assessment**<br>[ ] 1.00 Fully implemented<br>[ ] 0.80 In progress with full resources available to achieve the capability<br>[ X] 0.60 In progress but with only partial resources available to achieve the capability<br>[ ] 0.40 Planned and with resources available to achieve the capability<br>[ ] 0.20 Planned but with no resources available to achieve the capability<br>[ ] 0.00 This desired, but is not planned<br>[ ] Not applicable (explanation required) | LOJIC has well-defined standards for metadata and rules governing capture and maintenance of metadata for GIS data layers. Metadata is well-maintained for datasets that fall under LOJIC's maintenance responsibility. Metadata requirements are overseen by LOJIC staff but not always fully adhered to by partner organizations responsible for maintenance. Brings up question about possible adjustments of metadata update policies for certain non-Framework or less critical GIS data. In addition, it was noted that entry of metadata for non-Framework data (maintained by LOJIC partners) is necessary<br><br>The size of the LOJIC GIS database makes user discovery about available data and its content/format difficult. Improvements could be made with better tools for query and access to metadata. |

| Enabling Capability (EC) Component | Model Characteristics | Preliminary LOJIC Assessment | **LOJIC Assessment Comments and Documentation** Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component? |
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| **EC7. Spatial Data Warehouse** | Is an enterprise spatial data infrastructure in place that includes a centralized production database environment available for GIS data stewards to compile the official version of framework and business spatial data? <br>• Is a separate spatial data warehouse available for GIS users to access and download the official published version of the data for GIS applications? <br>• Is there a consistent data structure and are there consistent practices for effective data maintenance, posting and processing? <br>• Is the enterprise GIS the authoritative source of spatial data for the organization? | **Preliminary Assessment** <br>[ ] 1.00 Fully implemented <br>[X] 0.80 In progress with full resources available to achieve the capability <br>[ ] 0.60 In progress but with only partial resources available to achieve the capability <br>[ ] 0.40 Planned and with resources available to achieve the capability <br>[ ] 0.20 Planned but with no resources available to achieve the capability <br>[ ] 0.00 This desired, but is not planned <br>[ ] Not applicable (explanation required) | LOJIC, through its home agency, MSD, maintains servers and a centrally-accessible GIS database (ArcSDE) for all GIS data maintained by LOJIC partners. LWC replicates data on its own server and IT infrastructure. Some access problems resulting from server and network configuration have been identified and are being addressed through a planned, near-term IT infrastructure upgrade |
| **EC8. Architectural Design** | Does an architectural design exist that defines the current state and planned future development of the technical infrastructure?  Does the architectural design guide the investment in GIS technical infrastructure? <br>• Does the GIS Architectural design support the business architecture and all business activities, per the Zachman Framework (or similar)? <br>• Does it align with agency IT standards and architecture? <br>• Does the agency analyze architectural gaps and drive IT standards and architectural design criteria? <br>• Note that architectural design(8) and Technical infrastructure (9) are interrelated | **Preliminary Assessment** <br>[ ] 1.00 Fully implemented <br>[ ] 0.80 In progress with full resources available to achieve the capability <br>[X] 0.60 In progress but with only partial resources available to achieve the capability <br>[ ] 0.40 Planned and with resources available to achieve the capability <br>[ ] 0.20 Planned but with no resources available to achieve the capability <br>[ ] 0.00 This desired, but is not planned <br>[ ] Not applicable (explanation required) | LOJIC does maintain and enterprise GIS architecture for access by its partner organizations and external users. There is not a specific architecture standard used (like Zachman).  Certain infrastructure and  architectural limitations present obstacles for data access, user applications, and performance including: <br>• Inefficient server and network resources and configuration result in access and performance problems <br>• GIS database and software configuration (including Citrix access) and scripts are outdated and have inefficiencies <br>• Continued use of ArcGIS v10.0 presents functionality and support limitations <br>• GIS applications and software platform (e.g., ArcGIS Desktop vs. ArcGIS Server) should be re-thought as part of ArcGIS v10.2 upgrade <br>• There are no overall standards or fully mature architectures in place to support mobile GIS applications <br>• The LOJIC web-site and online mapping services are outdated and could use a redesign |

| Enabling Capability (EC) Component | Model Characteristics | Preliminary LOJIC Assessment | LOJIC Assessment Comments and Documentation<br>Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component? |
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| EC9. Technical Infrastructure | Is there technical infrastructure in place to maintain and operate the GIS and to meet the agency business needs?<br>• Meeting agency business needs should be defined against agreed performance criteria. Technical infrastructure includes hardware (servers, storage, desktops, input and output peripherals), network components, operating system, and GIS software.<br>• Note that architectural design(8) and Technical infrastructure (9) are interrelated | **Preliminary Assessment**<br>[ ] 1.00 Fully implemented<br>[ ] 0.80 In progress with full resources available to achieve the capability<br>**[X]** 0.60 In progress but with only partial resources available to achieve the capability<br>[ ] 0.40 Planned and with resources available to achieve the capability<br>[ ] 0.20 Planned but with no resources available to achieve the capability<br>[ ] 0.00 This desired, but is not planned<br>[ ] Not applicable (explanation required) | See response to EC8. |
| EC10. Replacement Plan | Is there a plan in place and implemented to replace technical infrastructure components (hardware, network components, current imagery, and other procured data) that have a defined 'end of useful life? | **Preliminary Assessment**<br>[ ] 1.00 Fully implemented<br>**[X]** 0.80 In progress with full resources available to achieve the capability<br>[ ] 0.60 In progress but with only partial resources available to achieve the capability<br>[ ] 0.40 Planned and with resources available to achieve the capability<br>[ ] 0.20 Planned but with no resources available to achieve the capability<br>[ ] 0.00 This desired, but is not planned<br>[ ] Not applicable (explanation required) | LOJIC, working with MSD IT Department has planned a major server, network, and software configuration improvement effort that will likely make major improvements to system performance for LOJIC staff and users.  The current plan does not address some specific areas of server and database configuration for ArcGIS software and ArcSDE database. There is no annual "technology improvement fund" allocation that would accumulate funds for future hardware replacement. |
| EC11. GIS Software Maintenance | Is GIS software available and adequate to meet agency business needs and is it under maintenance to ensure long term support and development?<br>• If open-source' GIS software is used, is alternate support and development capability available and are the real costs of operation and maintenance accounted for? | **Preliminary Assessment**<br>**[X]** 1.00 Fully implemented<br>[ ] 0.80 In progress with full resources available to achieve the capability<br>[ ] 0.60 In progress but with only partial resources available to achieve the capability<br>[ ] 0.40 Planned and with resources available to achieve the capability<br>[ ] 0.20 Planned but with no resources available to achieve the capability<br>[ ] 0.00 This desired, but is not planned<br>[ ] Not applicable (explanation required) | An enterprise Esri license is in place that supports software (ArcGIS Server, ArcGIS Desktop, and other GIS software) access by LOJIC staff and partner organizations. Decision has been made to make transition from ArcGIS 10.0 to ArcGIS 10.2 in the first half of 2015. |

| Enabling Capability (EC) Component | Model Characteristics | Preliminary LOJIC Assessment | LOJIC Assessment Comments and Documentation<br>Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component? |
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| **EC12.  Data back-up and security** | Is a computer back-up system in place to ensure the security of GIS data and applications?<br>• Is the backup system is tested periodically by tests to restore sample data?<br>• Is system security in place to control internal and external access to GIS data and applications as appropriate?<br>• Is a GIS data archiving and preservation program in place? | **Preliminary Assessment**<br>**[X]** 1.00 Fully implemented<br>**[ ]** 0.80 In progress with full resources available to achieve the capability<br>**[ ]** 0.60 In progress but with only partial resources available to achieve the capability<br>**[ ]** 0.40 Planned and with resources available to achieve the capability<br>**[ ]** 0.20 Planned but with no resources available to achieve the capability<br>**[ ]** 0.00 This desired, but is not planned<br>**[ ]** Not applicable (explanation required)<br>**Cannot Assess based on limited information** | Regular backup process in place (run by MSD IT Department). |
| **EC13.  GIS Application Portfolio** | If required to meet the needs of agency GIS users/clients, is a portfolio of custom or off-the-shelf GIS or GIS enabled applications available? | **Preliminary Assessment**<br>**[ ]** 1.00 Fully implemented<br>**[ ]** 0.80 In progress with full resources available to achieve the capability<br>**[X]** 0.60 In progress but with only partial resources available to achieve the capability<br>**[ ]** 0.40 Planned and with resources available to achieve the capability<br>**[ ]** 0.20 Planned but with no resources available to achieve the capability<br>**[ ]** 0.00 This desired, but is not planned<br>**[ ]** Not applicable (explanation required) | LOJIC and its partner organizations, as well as external organizations that license LOJIC data have many custom applications in place that address business needs of users. This includes several online GIS query and mapping applications. However, there are major opportunities for new applications and an expanded user community including:<br>• Additional online custom applications and services from LOJIC Website (e.g., custom routing) and enhancements to the current LOJIC Online Map.<br>• New and enhanced applications for Louisville Metro departments in the areas of public safety, public works and infrastructure management, public health, land use permitting and planning, and application development.<br>• Custom Web-based GIS query and mapping interfaces for PVA and Metro.<br>• Improved GIS integration with Infor/Hansen with v 8.2 (for Metro and MSD).<br>• Implementation of new CAMA system with GIS integration for PVA.<br>• Support for multi-organizational infrastructure project tracking and coordination of capital project work.<br>• New applications for digital elevation data and 3D analysis and visualization.<br>• New and expanded field/mobile GIS applications for LOJIC and each partner organization. |

| Enabling Capability (EC) Component | Model Characteristics | Preliminary LOJIC Assessment | **LOJIC Assessment Comments and Documentation** Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component? |
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| **EC14. GIS Application Portfolio Management** | Is the agency's GIS application portfolio managed to a common design and development framework? | **Preliminary Assessment** [ ] 1.00 Fully implemented [ ] 0.80 In progress with full resources available to achieve the capability **[X]** 0.60 In progress but with only partial resources available to achieve the capability [ ] 0.40 Planned and with resources available to achieve the capability [ ] 0.20 Planned but with no resources available to achieve the capability [ ] 0.00 This desired, but is not planned [ ] Not applicable (explanation required) | See EC13. Some applications for partner organizations are developed by LOJIC but many are the responsibility of individual partner organizations. LWC and MSD have an extensive portfolio of applications which are centrally coordinated. Metro's GIS applications are managed at a department level and generally are not centrally managed. Universally accepted standards have not been developed and this will become more important as new or enhanced applications are deployed in an ArcGIS Server environment. |
| **EC15. GIS Application Portfolio O&M** | Is the agency's GIS application portfolio kept viable via ongoing support and application maintenance? | **Preliminary Assessment** [ ] 1.00 Fully implemented [ ] 0.80 In progress with full resources available to achieve the capability **[X]** 0.60 In progress but with only partial resources available to achieve the capability [ ] 0.40 Planned and with resources available to achieve the capability [ ] 0.20 Planned but with no resources available to achieve the capability [ ] 0.00 This desired, but is not planned [ ] Not applicable (explanation required) | See comments for EC13 and EC14. There are significant opportunities for improvement for applications managed by LOJIC staff and those in individual partner organizations— particularly Metro. Planned ArcGIS v10.2 migration is an opportunity for improvements. |
| **EC16. Professional GIS Management** | Is the agency GIS managed by a qualified manager with appropriate education, experience, and credentials? | **Preliminary Assessment** [ ] 1.00 Fully implemented **[X]** 0.80 In progress with full resources available to achieve the capability [ ] 0.60 In progress but with only partial resources available to achieve the capability [ ] 0.40 Planned and with resources available to achieve the capability [ ] 0.20 Planned but with no resources available to achieve the capability [ ] 0.00 This desired, but is not planned [ ] Not applicable (explanation required) | LOJIC is directed by an extremely qualified and experienced manager with responsibility over LOJIC staff and coordination with LOJIC Policy Board and LOJIC partner organizations. LOJIC also has a Customer Service position that has a primary role in user communications and coordination (LOJIC partners and external users). Effective management is in place in most partner organizations but major improvements in GIS coordination and management in Metro have been identified and are needed. |

| Enabling Capability (EC) Component | Model Characteristics | Preliminary LOJIC Assessment | LOJIC Assessment Comments and Documentation<br>Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component? |
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| **EC17. Professional GIS Operations Staff** | Is the agency GIS operated and maintained by an adequate staff with appropriate professional qualifications?<br>• For purposes of the GISCMM, adequate operational staffing is defined as meeting the 'roles' defined by the Geospatial Technology Competency Model – see: http://www.careeronestop.org/CompetencyModel/pyramid.aspx?GEO=Y. | **Preliminary Assessment**<br>[  ] 1.00 Fully implemented<br>**[X]** 0.80 In progress with full resources available to achieve the capability<br>[  ] 0.60 In progress but with only partial resources available to achieve the capability<br>[  ] 0.40 Planned and with resources available to achieve the capability<br>[  ] 0.20 Planned but with no resources available to achieve the capability<br>[  ] 0.00 This desired, but is not planned<br>[  ] Not applicable (explanation required) | LOJIC currently has very well-qualified staff with GIS database, software, application, and user support skills and experience. Two current vacancies do need to be filled in the near future (assistant user support, desktop GIS specialist). Partner organizations also have staff with GIS skills. Several staffing related concerns have been identified:<br>Current LOJIC staff capacity is strained—able to maintain routine operations but not to proactively explore new opportunities, applications, and improved processes<br>• LOJIC relies on MSD IT department staff for database and IT infrastructure support. MSD has very qualified technical staff but there is concern about need for more GIS expertise—as it applies to server, network, software, and database configuration and administration.<br>• Need improved user support and proactive user communication to explore and help develop new applications—biggest impact on Metro.<br>• No plans or budget projections are in place to expand current staff to explore and develop new applications—for LOJIC and for its partners (particularly Metro). Part of the problem is that all LOJIC staff are paid by MSD.<br>• There may be staffing limitations necessary to support two key (and perhaps other) major upcoming initiatives (ArcGIS 10.2 migration and Hansen v8.2 upgrade with GIS integration and customization to meet needs of current HARP users).<br>• Concerns about recruiting qualified staff, retaining them, and addressing issues of pay equity with equivalent IT positions. |

| Enabling Capability (EC) Component | Model Characteristics | Preliminary LOJIC Assessment | LOJIC Assessment Comments and Documentation<br>Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component? |
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| **EC18. GIS Staff Training, User Support, and Professional Development** | Do the agency GIS manager and other professional staff have access to on-going training to maintain and develop their technical and operational knowledge, skills, and abilities? | **Preliminary Assessment**<br>[ ] 1.00 Fully implemented<br>[ ] 0.80 In progress with full resources available to achieve the capability<br>[X] 0.60 In progress but with only partial resources available to achieve the capability<br>[ ] 0.40 Planned and with resources available to achieve the capability<br>[ ] 0.20 Planned but with no resources available to achieve the capability<br>[ ] 0.00 This desired, but is not planned<br>[ ] Not applicable (explanation required) | LOJIC staff provide technical support and have specific training programs for users as well as online help from the LOJIC Web Site. Training courses are offered by LOJIC or as requested for users. Esri enterprise software license provides discounts for instructor-led training and use of the online Virtual Campus courses. MSD has recently prepared a training plan with support from Esri. There are limitations and areas for improvement:<br>• LOJIC staff and GIS personnel in LOJIC partner organizations have limited time for training (and often not specific time allocation to participate in training).<br>• Some funding and availability limitations for instructor-led training courses (surveys show demand for additional classes).<br>• Limitations on LOJIC staff time to connect with users and provide proactive support (particularly for Metro).<br>• Need for documentation of GIS-related processes to capture institutional knowledge and support orientation and training for new staff.<br>• Benefits possible from expanded participation in professional associations and GIS conferences and workshops.<br>• LOJIC does have a user support request process in place but there may be benefits to a more formal helpdesk request/tracking system.<br>• Re-activated User Group and other efforts to connect users (e-Newsletter, Blog, social media).<br>• Major enhancements and new system implementation (ArcGIS 10.2, Hansen upgrade, PVA CAMA system migration, new LWC customer management and infrastructure asset/work management systems) will introduce additional training needs. |

| Enabling Capability (EC) Component | Model Characteristics | Preliminary LOJIC Assessment | LOJIC Assessment Comments and Documentation Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component? |
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| **EC19. GIS Governance Structure** | Does the agency have a formal GIS governance structure that links the GIS operation both to users and to key decision makers?<br>• For some agencies (very small or with well-oiled enterprise GIS) a formal committee structure may not be required. A formal committee is a traditional practice, but in everyday practice, many agencies proceed without such a formal committee structure.<br>Does the agency's governance address:<br>• Long-range planning<br>• Stakeholder satisfaction<br>• Ability for business stakeholders to leverage initiatives | **Preliminary Assessment**<br>[ ] 1.00 Fully implemented<br>[ ] 0.80 In progress with full resources available to achieve the capability<br>**[X]** 0.60 In progress but with only partial resources available to achieve the capability<br>[ ] 0.40 Planned and with resources available to achieve the capability<br>[ ] 0.20 Planned but with no resources available to achieve the capability<br>[ ] 0.00 This desired, but is not planned<br>[ ] Not applicable (explanation required) | Historically, LOJIC has put in place key elements of an enterprise, multi-organizational GIS governance and management structure including a Policy Committee (now Policy Board), Technical Committee, License agreements, and formal communication and coordination with partner organizations. There are important needs for and benefits from specific improvements:<br>• Improved and better defined role of Policy Board.<br>• Re-activate the currently inactive Technical Committee (perhaps renamed Steering Committee) with primary objective to coordinate and get input from GIS coordination staff in partner organizations and for support to Policy Board.<br>• Establishment of multi-organizational project teams to support specific LOJIC initiatives.<br>• Active written agreements among partner organizations are not in place.<br>• Creation of more effective centrally coordinated GIS program in Metro with better definition of coordination with LOJIC. |
| **EC20. GIS is Linked to Agency Strategic Goals** | Does the GIS as it exists have a defined responsibility and a clearly defined role in supporting the strategic goals of the agency? | **Preliminary Assessment**<br>[ ] 1.00 Fully implemented<br>[ ] 0.80 In progress with full resources available to achieve the capability<br>**[X]** 0.60 In progress but with only partial resources available to achieve the capability<br>[ ] 0.40 Planned and with resources available to achieve the capability<br>[ ] 0.20 Planned but with no resources available to achieve the capability<br>[ ] 0.00 This desired, but is not planned<br>[ ] Not applicable (explanation required) | Historically, GIS development and application deployment by LOJIC and its partner agencies have focused on using GIS technology to support business needs. The current GIS database and application portfolio is extensive. LOJIC data products and custom maps and online applications serve a large user community. GIS management and use in partner organizations—most importantly in MSD and LWC are very well-directed towards business needs of those organizations. There are substantial opportunities for expansion of GIS access and applications to supported business needs (see EC 13, 14, 15). Opportunities are particularly apparent for LOJIC online services and expanded applications and internal GIS coordination in Metro. |

| Enabling Capability (EC) Component | Model Characteristics | Preliminary LOJIC Assessment | LOJIC Assessment Comments and Documentation Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component? |
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| EC21. GIS Budget | Does the GIS operation develop a comprehensive budget that includes (at a minimum) labor, hardware, software, data, consulting, and training costs?<br>• This mean either a separate GIS budget or embedded budget components that the GIS manager has input on and can base planning and programs upon as the budget is expended. | **Preliminary Assessment**<br>[ ] 1.00 Fully implemented<br>[ ] 0.80 In progress with full resources available to achieve the capability<br>[X] 0.60 In progress but with only partial resources available to achieve the capability<br>[ ] 0.40 Planned and with resources available to achieve the capability<br>[ ] 0.20 Planned but with no resources available to achieve the capability<br>[ ] 0.00 This desired, but is not planned<br>[ ] Not applicable (explanation required) | Since the late 1980s, the LOJIC budget has been stable and sustained. The main funding source is contributions from the 4 partner organizations with additional revenues from LOJIC Licenses and sales of GIS products. There are concerns that impact current and future financial support:<br>• After FY2009, financial contributions from partner organizations Metro, LWC, and PVA were greatly decreased with MSD taking up the difference. This creates an inequity in funding (based on number and level of use of LOJIC products and services). A 3-year "ramp-up" of contributions (starting in FY 2016) from the three partner organizations has been proposed but not approved.<br>• Revenues from sale of LOJIC products have decreased significantly over the last 7 years. Strong interest in open data may drive decisions about lowering or eliminating fees.<br>• Current LOJIC budget projections do not include any additional staff which may be needed to support expanded applications and user support. |
| EC22. GIS Funding | Does the GIS organization have adequate funding for (at a minimum) labor, hardware, software, data, consulting, and training costs? | **Preliminary Assessment**<br>[ ] 1.00 Fully implemented<br>[ ] 0.80 In progress with full resources available to achieve the capability<br>[X] 0.60 In progress but with only partial resources available to achieve the capability<br>[ ] 0.40 Planned and with resources available to achieve the capability<br>[ ] 0.20 Planned but with no resources available to achieve the capability<br>[ ] 0.00 This desired, but is not planned<br>[ ] Not applicable (explanation required) | See comments for EC22. For long-term financing, changes in LOJIC partner contributions are needed. In addition, other funding sources and financing strategies should be actively pursued. |
| EC23. GIS Financial Plan | Does the GIS organization have a financial plan that includes a funding model (where the money is coming from) and that also projects future episodic costs for equipment, imagery, and other data replacement? | **Preliminary Assessment**<br>[ ] 1.00 Fully implemented<br>[ ] 0.80 In progress with full resources available to achieve the capability<br>[X] 0.60 In progress but with only partial resources available to achieve the capability<br>[ ] 0.40 Planned and with resources available to achieve the capability<br>[ ] 0.20 Planned but with no resources available to achieve the capability<br>[ ] 0.00 This desired, but is not planned<br>[ ] Not applicable (explanation required) | See comments for EC21 and EC22. Policy Board approval, and management in partner organizations, need to understand and be in full support of changes in budget and long-term financing. |

[1]For use in the LOJIC assessment, the GISCMM uses the term "Framework Data" to refer to base map layers and other map layers of major importance to all or most LOJIC partners. Framework data is used as a spatial reference for other GIS data layers and to support mission critical needs of users.

[2]Business data (sometimes referred to as "Thematic" data) encompasses all non-Framework data that is associated with specific applications, business areas, and/or groups of users.

## EXECUTION ABILITY COMPONENT SCORING:

| Execution Ability Component | Characteristics | Assessment, Comments, and Documentation | LOJIC Assessment Comments and Documentation<br>Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component?<br>Describe/submit documentation (required to be rated at Level 3 or above) |
|---|---|---|---|
| **EA1. New Client Services Evaluation and Development** | How does the GIS operation evaluate new agency business needs for GIS services and develop plans to respond to new client service requests?<br>• This component should include a timeline/turn-around response focus.<br>• Are new services evaluated against the agency strategic plan?<br>• Are new services evaluated against ROI criteria...does it make financial sense?<br>• Level 5 – optimized process – requires looking at existing services also and evaluating them to provide optimized services. | Assessment<br>[ ] Level Five: Optimized processes<br>[ ] Level Four: Managed and measured processes<br>[X] Level Three: Defined processes<br>[ ] Level Two: Repeatable processes<br>[ ] Level One: Ad-hoc processes | LOJIC has technical and customer support processes in place and encourages internal users (LOJIC partners) and external users to provide input and questions which are responded to by LOJIC staff. The LOJIC User Support Administrator is in charge of handling requests. There are not specific, documented plans, processes, and templates for responding to new client service requests. Also, staff limitations and funding changes have reduced LOJIC staff ability to respond to user service requests (mainly for Metro). |
| **EA2. User Support, Help Desk, and End-User Training** | How does the GIS operation support end users, including user guides, help documentation, training, and ad-hoc help-desk and/or on-site support?<br>• This component should include a timeline/turn-around response focus<br>• This should include a 'train-the-trainer program. | Assessment<br>[ ] Level Five: Optimized processes<br>[ ] Level Four: Managed and measured processes<br>[X] Level Three: Defined processes<br>[ ] Level Two: Repeatable processes<br>[ ] Level One: Ad-hoc processes | LOJIC provides online tutorials and help for users and a process for submittal of help requests. There are also established training courses held periodically by LOJIC and they may be requested by users. The LOJIC enterprise license with Esri provides opportunities for instructor-led and Virtual Campus online courses for all LOJIC partners and licensees. Led by the LOJIC User Support Administrator, the LOJIC staff is focused on supporting users. While LOJIC does capture some metrics, there is not a formal Helpdesk process or tool for logging and tracking response to requests. Also, staff limitations and funding changes has reduced LOJIC staff ability to respond to user service requests (mainly for Metro).<br><br>Several LOJIC partner organizations have in place support staff and procedures for handling user requests (LWC, MSD). |

| Execution Ability Component | Characteristics | Assessment, Comments, and Documentation | **LOJIC Assessment Comments and Documentation** Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component? Describe/submit documentation (required to be rated at Level 3 or above) |
|---|---|---|---|
| **EA3. Service Delivery Tracking and Oversight** | How does the GIS unit monitor and evaluate client service delivery? | Assessment<br>[ ] Level Five: Optimized processes<br>[ ] Level Four: Managed and measured processes<br>[X] Level Three: Defined processes<br>[ ] Level Two: Repeatable processes<br>[ ] Level One: Ad-hoc processes | See responses to EA1 and EA 2. LOJIC does keep a log of requests and responses. |
| **EA4. Service Quality Assurance** | How does the GIS operation ensure the quality of services provided to clients?<br>• This should also recognize the quality that can be provided may be dependent upon the time available to meet the client's needs | Assessment<br>[ ] Level Five: Optimized processes<br>[ ] Level Four: Managed and measured processes<br>[X] Level Three: Defined processes<br>[ ] Level Two: Repeatable processes<br>[ ] Level One: Ad-hoc processes | LOJIC has assigned User Support Administrator and plans to hire an Assistant User Support person for enhanced support. LOJIC operates with a strong customer service focus. LOJIC and partner organizations have expressed need for better documentation of GIS-related processes. Periodic user surveys provide information for evaluating service quality and user satisfaction but there is a need for improved connection and communication with users in LOJIC Partner organizations. |
| **EA5. Application Development or Procurement Methodology** | How does the GIS operation develop custom GIS applications?<br>• Do GIS applications align with and support business needs?<br>• How does the GIS Operation perform requirements development and development execution strategy, including build vs. buy decision?<br>• How does the GIS Operation manage GIS application development when in-house programming is not included within the GIS operation?<br>• This should also recognize the quality that can be provided may be dependent upon the time available to meet the client's needs | Assessment<br>[ ] Level Five: Optimized processes<br>[ ] Level Four: Managed and measured processes<br>[ ] Level Three: Defined processes<br>[X] Level Two: Repeatable processes<br>[ ] Level One: Ad-hoc processes | Procedures or specific process/methodology for application design and development are not documented although LOJIC management and staff do apply efficient processes when application development projects are undertaken. LOJIC maintains staff with ArcGIS Server (Web) and ArcGIS Desktop development skills. There are concerns about LOJIC staff not being fully up-to-date with current technology. Upcoming LOJIC initiatives (ArcGIS 10.2 migration, Infor/Hansen upgrade) and initiatives in partner organizations (PVA CAMA system, LWC asset/work management system) present opportunities for improvements in defining and using formal methodologies. |
| **EA6. Project Management Methodology** | How does the GIS operation manage projects for which it is responsible?<br>• Projects could be either executed in-house or by an outside contractor. | Assessment<br>[ ] Level Five: Optimized processes<br>[ ] Level Four: Managed and measured processes<br>[X] Level Three: Defined processes<br>[ ] Level Two: Repeatable processes<br>[ ] Level One: Ad-hoc processes | LOJIC and its partners apply effective project planning and management practices and methodologies for internal work and in oversight of contractor services. This includes sound project planning, tracking, reporting, and project team coordination. NOTE: good example is current Strategy Innovation project. There is room for improvement in PM applying improved PM best practices from Project Management Institute (PMI) Project Management Body of Knowledge (PMBOK). |

| Execution Ability Component | Characteristics | Assessment, Comments, and Documentation | LOJIC Assessment Comments and Documentation<br>Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component?<br>Describe/submit documentation (required to be rated at Level 3 or above) |
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| **EA7. Quality Assurance and Quality Control** | How does the GIS operation assure a reasonable and appropriate level of quality for projects and for ongoing GIS system operation, to meet defined business needs?<br>• System operations include database maintenance and spatial data warehouse processes.<br>• Data is a key enterprise GIS component for effective QA/QC.<br>• Perhaps there are several processes against which this maturity component should be applied. | Assessment<br>[ ] Level Five: Optimized processes<br>[ ] Level Four: Managed and measured processes<br>[X] Level Three: Defined processes<br>[ ] Level Two: Repeatable processes<br>[ ] Level One: Ad-hoc processes | Procedures are in place for quality assurance as it relates to GIS database development and update in LOJIC and its partner organizations. QA procedures for other products and services (custom applications) not fully documented. |
| **EA8. GIS Technical Management** | How does the GIS operation manage the core GIS systems that it is responsible for?<br>• GIS system management includes system administration, database administration, network administration, system security, data backup, security, and restore processes, etc.<br>• If these functions are managed within the GIS Operation, there should be defined procedures/best practices. But if the functions are provided outside the GIS operation, these procedures and best practices should form the basis for well-defined service level agreements. | Assessment<br>[ ] Level Five: Optimized processes<br>[ ] Level Four: Managed and measured processes<br>[ ] Level Three: Defined processes<br>[X] Level Two: Repeatable processes<br>[ ] Level One: Ad-hoc processes | LOJIC technical system and GIS database administration relies heavily on MSD IT department. While server, network, and database administration processes are in place, there are recognized shortcomings and will be addressed, by MSD IT, in a major system upgrade and improvement effort to be completed in the first half of 2015. There is concern about lack of current staff with system and database administration staff skills for GIS ArcGIS Server and ArcSDE database configuration and administration. Would be a good idea to have a formal Service Level Agreement (SLA) between LOJIC and MSD IT.<br><br>LOJIC partners MSD, Metro, and PVA rely on LOJIC systems. LWC maintains it own, well-managed, server, network, and database administration environment. |
| **EA9. Process Event Management** | How does the GIS operation manage GIS system process events?<br>• Typical process events include planned hardware and software upgrades, unplanned hardware failure and data loss and restore events.<br>• This should include well defined change management best practices, for both routine/batch processes, and for significant system upgrades/modifications. | Assessment<br>[ ] Level Five: Optimized processes<br>[ ] Level Four: Managed and measured processes<br>[ ] Level Three: Defined processes<br>[X] Level Two: Repeatable processes<br>[ ] Level One: Ad-hoc processes | See response to EA8. System infrastructure and administration improvements will enhance Event Management but it will be necessary to put in place well-documented processes and tools for system and database monitoring, reporting, tuning, etc. |

| Execution Ability Component | Characteristics | Assessment, Comments, and Documentation | **LOJIC Assessment Comments and Documentation** Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component? Describe/submit documentation (required to be rated at Level 3 or above) |
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| **EA10. Contract and Supplier Management** | How does the GIS operation manage its purchasing and contracting processes to ensure the best value for the supplies and services that it acquires? | Assessment<br>[ ] Level Five: Optimized processes<br>[ ] Level Four: Managed and measured processes<br>[X] Level Three: Defined processes<br>[ ] Level Two: Repeatable processes<br>[ ] Level One: Ad-hoc processes | LOJIC operates under the procurement and contract management rules of MSD and this follows well-defined processes for competitive procurement and contract management. Partner organizations follow their own internal contract rules and procedures. There may be room for improvement in the way in which LOJIC coordinates procurements with its partner organizations. |
| **EA11. Regional Collaboration** | How does the GIS operation manage regional collaboration to ensure that opportunities to share in the development and operation of data, infrastructure, and applications are pursued, and that the agency's GIS is leveraged to benefit other potential local partners? | Assessment<br>[ ] Level Five: Optimized processes<br>[X] Level Four: Managed and measured processes<br>[ ] Level Three: Defined processes<br>[ ] Level Two: Repeatable processes<br>[ ] Level One: Ad-hoc processes | Since the late 1980s, LOJIC has been a model for a multi-organizational GIS consortium for coordination among partner organizations and licensees in Jefferson County. More recently, agreements with Oldham and Bullitt counties have expanded the regional coordination to the benefit of all parties. There is an expressed interest and initial ideas for further regional expansion. License agreements establish a clear environment for external organization participation. There are needs for formalizing agreements with LOJIC partner organizations (no active written agreements are in place). |
| **EA12. Staff Hiring and Development** | How does the GIS operation manage the process of hiring and developing its staff to ensure that individual staff member skills are developed appropriate to current and emerging technical and business needs?<br>• How does the GIS operation ensure that its staff resources meet its operational requirements for individual GIS competencies, including back-up and succession planning?<br>• A best practice would include a well-defined and effective performance management and appraisal system.<br>• A key objective would be minimizing risk to the organization, while enhancing staff effectiveness and productivity. | Assessment<br>[ ] Level Five: Optimized processes<br>[ ] Level Four: Managed and measured processes<br>[X] Level Three: Defined processes<br>[ ] Level Two: Repeatable processes<br>[ ] Level One: Ad-hoc processes | LOJIC staff recruitment, hiring, and employee evaluation follow MSD HR procedures and the process is well-organized (as exhibited by current process for hiring staff for 2 vacant positions). Formal HR Procedures in partner organizations are also in place. Lack of centrally coordinated GIS program in Metro impacts consistency and coordination of staff hiring and assignments. Recruitment and staff professional development is taken seriously in participant organizations LWC, MSD, and PVA. Move toward a more centralized management model for GIS in Metro will be a basis for improvements. For LOJIC and all participant organizations, a more organized and documented environment for defining staff skills, professional development goals, and documentation on staff advancement would be useful.<br><br>See EC18 for current challenges and limitations relating to staff and user training and professional development |
| **EA13. Operation Performance Management** | How does the GIS operation manage performance of its operations as a whole?<br>• This is the single key indicator of organizational process maturity and execution ability? Perhaps an organization's rating in this area would serve as a ceiling for its overall rating. | Assessment<br>[ ] Level Five: Optimized processes<br>[ ] Level Four: Managed and measured processes<br>[ ] Level Three: Defined processes<br>[X] Level Two: Repeatable processes<br>[ ] Level One: Ad-hoc processes | LOJIC has procedures and tools in place for tracking services for users and time applied to different work areas by LOJIC staff. There is currently no formal process or method for evaluating or rating overall performance and support for users. This may be an area which could be formalized by the Policy Board—perhaps through a re-activated Technical Committee (renamed Steering Committee). |

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| **EA14. Individual GIS Staff Performance Management** | How does the GIS operation manage individual employee staff performance? | Assessment<br>[ ] Level Five: Optimized processes<br>[X] Level Four: Managed and measured processes<br>[ ] Level Three: Defined processes<br>[ ] Level Two: Repeatable processes<br>[ ] Level One: Ad-hoc processes | LOJIC Manager has primary role for overseeing staff performance and conducting employee reviews (following MSD procedures). LOJIC staff are organized into functional and service areas. This is well-managed although there may be room for improvement through more regular and formal process for getting input from users as basis for staff evaluation. NOTE: recent SI surveys provide good perspective on staff performance. A regular process for gauging user satisfaction could provide basis for improvements in staff performance evaluation.<br><br>Partner organizations have their own procedures in place for GIS staff evaluation. Interest in moving toward a more centrally managed enterprise GIS program in Metro could be basis for improvements. |
| **EA15. Client Satisfaction Monitoring and Assurance** | How does the GIS operation monitor, assess, and assure the satisfaction of its clients?<br>• Ideally, clients should be surveyed to indicate their satisfaction with individual projects and with the enterprise GIS operation as a whole. | Assessment<br>[ ] Level Five: Optimized processes<br>[ ] Level Four: Managed and measured processes<br>[X] Level Three: Defined processes<br>[ ] Level Two: Repeatable processes<br>[ ] Level One: Ad-hoc processes<br>Comments: | LOJIC does have procedures and encourages user feedback and does conduct periodic user surveys (e.g., recent SI internal and external surveys). Formal surveys are not conducted on a regular basis—which would provide good information for process improvements. LOJIC staff limitations have impacted extent to which LOJIC can monitor user satisfaction. Also, inactive Technical Committee and User Group have negatively impacted "connectedness" of user community and opportunities for dialogue and feedback. A simple on-line tool for capturing user satisfaction in connection with specific projects would be helpful and provide additional metrics for evaluation. |
| **EA16.– Resource Allocation Management** | How does the GIS optimize use of its operational staff and of other resources at its disposal, both to minimize costs and to achieve maximum overall effectiveness for the enterprise?<br>• This should include a global correlation between an organization's resources and the services that it provides, both internal and external. | Assessment<br>[ ] Level Five: Optimized processes<br>[ ] Level Four: Managed and measured processes<br>[X] Level Three: Defined processes<br>[ ] Level Two: Repeatable processes<br>[ ] Level One: Ad-hoc processes | See response to EA14. LOJIC staff are organized into functional and service areas. Filling current LOJIC staff vacancies will improve resource management. To expand LOJIC ability to support users with enhanced services (particularly for Metro), an additional position (not currently budgeted) may be needed. There is no specific "resource allocation plan" but roles for LOJIC staff have been defined. There is room for improvement in LOJIC participant organizations especially Metro. |

| Execution Ability Component | Characteristics | Assessment, Comments, and Documentation | LOJIC Assessment Comments and Documentation<br>Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component?<br>Describe/submit documentation (required to be rated at Level 3 or above) |
|---|---|---|---|
| **EA17. GIS data sharing** | Is GIS data sharable and is it shared? How does the GIS operation leverage shared and sharable GIS data to maintain effectiveness and minimize cost and redundant functions? | Assessment<br>[ ] Level Five: Optimized processes<br>[X] Level Four: Managed and measured processes<br>[ ] Level Three: Defined processes<br>[ ] Level Two: Repeatable processes<br>[ ] Level One: Ad-hoc processes | From its beginning, LOJIC has put in place well-organized rules and process for GIS data sharing and access by users. LOJIC partner organizations have full access to LOJIC database and terms for access are well-defined in formal agreements with licensees. Licenses are in place for Oldham and Bullitt Counties. Terms for external organization access (data downloads and CD distribution) are in place for external users (fees apply to most external users). LOJIC provides access to Online Map and custom map products for download. Some GIS data (e.g., LWC water distribution) have access/distribution restrictions. Improvements in process for transfer of parcel data from PVA to LOJIC servers (move to daily transfer from current weekly transfer) are in planned. Also improvements for data replication with LWC are planned.<br><br>There is room for improvement of online tools through LOJIC Web Site. Also, strong interest in Open Data may impact license terms and fee policies. |
| **EA18. GIS Software License Sharing** | Are GIS software licenses sharable and are they shared?<br>• How does the GIS operation leverage shared and sharable GIS software to maintain effectiveness and minimize cost and redundant services? | Assessment<br>[ ] Level Five: Optimized processes<br>[ ] Level Four: Managed and measured processes<br>[X] Level Three: Defined processes<br>[ ] Level Two: Repeatable processes<br>[ ] Level One: Ad-hoc processes | LOJIC is administrator of Esri Enterprise License and makes software available to LOJIC partners. LOJIC has negotiated terms for Esri software use by organizations with geographic areas outside of Jefferson County. LOJIC partners Metro, PVA, and MSD make major use of Citrix for ArcGIS Desktop access and there are performance problems. There may be improvements for expanded use of ArcGIS Server (and reduced use of Citrix). IT infrastructure and system administration improvements planned by LOJIC IT department will be basis for improvements in software license administration. |
| **EA19. GIS data inter-operability** | Are agency framework and business geospatial data sources capable of being integrated and accessed in a technically appropriate and efficient manner? | Assessment<br>[ ] Level Five: Optimized processes<br>[X] Level Four: Managed and measured processes<br>[ ] Level Three: Defined processes<br>[ ] Level Two: Repeatable processes<br>[ ] Level One: Ad-hoc processes | Effective standards and processes in place for managing GIS data in an ArcSDE geodatabase (with Oracle). Some use of custom integration between GIS and external systems and databases is in place—managed by LOJIC or by partner organizations. Upcoming ArcGIS 10.2 upgrade and projects for GIS integration with external systems should improve the overall—using GIS integration tools and APIs that are included in the external systems (Infor/Hansen v8.2 migration, new PVA CAMA system, LWC Oracle WAM integration). |

| Execution Ability Component | Characteristics | Assessment, Comments, and Documentation | LOJIC Assessment Comments and Documentation<br>Does your agency use recognized professional standards for this component?' Does your agency use a formal internal standard for this component?<br>Describe/submit documentation (required to be rated at Level 3 or above) |
|---|---|---|---|
| **EA20. Legal and policy affairs management** | Are the GIS organization's activities conducted to comply with appropriate legal and policy guidelines and requirements?<br>• Does the GIS organization promote appropriate changes to the legal and policy framework to support effective enterprise GIS operations? | Assessment<br>[ ] Level Five:  Optimized processes<br>[ ] Level Four:   Managed and measured processes<br>[ ] Level Three:  Defined processes<br>[X] Level Two:  Repeatable processes<br>[ ] Level One:  Ad-hoc processes | LOJIC operates under MSD legal and policy rules and Policy Board has overall oversight responsibility on LOJIC adherence to legal and policy requirements. License terms are formalized with LOJIC licensees.<br><br>There are currently no active written agreements among LOJIC partner organizations and this should be addressed. Also, better definition of role of Policy Board and communication with GIS management in LOJIC partner organizations is needed—with possible re-activation of Steering Committee (perhaps renamed Steering Committee) to better inform senior managers of Policy Board. |
| **EA21. Balancing minimal privacy with maximum data usage** | Does the GIS operation adhere to open data sharing principles to the maximum potential while minimizing administrative hurdles and roadblocks?<br>• Does the GIS operation apply the maximum care to ensure the security of the minimum domain of restricted confidential data? | Assessment<br>[ ] Level Five:  Optimized processes<br>[X] Level Four:   Managed and measured processes<br>[ ] Level Three:  Defined processes<br>[ ] Level Two:  Repeatable processes<br>[ ] Level One:  Ad-hoc processes | LOJIC focuses on providing access to data and custom products to users with restrictions on access to certain data (e.g., LWC water distribution data). A fee schedule applies for access to data for licenses and external organizations.<br><br>There is some room for improvement in clarifying data availability and access restrictions as part of metadata management (see EC6). Also, interest in Open Data may drive changes in fee schedules. |
| **EA22.  Service to the community and to the profession** | Does the GIS operation support the GIS Certification Institute's and the URISA GIS Code of Ethics (www.gisci.org/ethics/codeofethics.aspx) as it relates contributions to society, the profession, and colleagues.<br>• Does the GIS operation support and encourage efforts by its staff members for appropriate professional outreach, educational, and community service activities related to GIS? | Assessment<br>[ ] Level Five:  Optimized processes<br>[ ] Level Four:   Managed and measured processes<br>[X] Level Three:  Defined processes<br>[ ] Level Two:  Repeatable processes<br>[ ] Level One:  Ad-hoc processes | While LOJIC and its partners do not formally apply the GISCI service terms, some GIS management and staff do have GISP certification. Historically, staff have participated in national professional associations and activities (e.g., Esri programs, URISA) but there is room for improvement (taking into account monetary and staff time limitations) for expanded involvement in professional associations and local educational and service activities.<br><br>Re-activation of User Group and related activities for improved coordination and mutual support for the LOJIC user community would yield benefits.  Move toward a more centrally coordinated GIS program in Metro would also enhance |