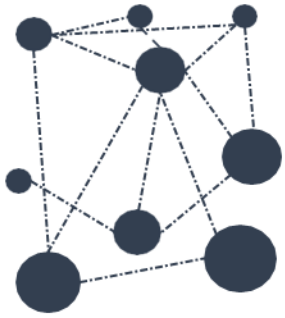
Lane Council of Governments



COOPERATIVE PROJECT AGREEMENT

Needs Assessment Findings

Geographic Technologies Group

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Introduction

Needs Assessment Findings

The objective of this GIS multi-phase strategic planning initiative is to examine, define, and restructure a long-standing, multi-jurisdictional Cooperative Project Agreement (CPA) among partner agencies (the Partners), including the City of Eugene, City of Springfield, Eugene Water and Electric Board (EWEB), Lane County, and Lane Council of Governments (LCOG).

The first step in this process was to document and describe the regional GIS ecosystem through the stakeholder identification process. The development of the *Stakeholder Identification Report* identified the stakeholders in the strategic planning process. The report also described Partner Agency structure goals and objectives as detailed in strategic plans. Also included was information pertaining to the GIS databases utilized throughout the Regional GIS Ecosystem, including the partner and other regional agencies.

Building upon the findings of the *Stakeholder Identification Report,* next steps focused on the development of two online questionnaires that were used to gather existing conditions and select stakeholder information and future service delivery requirements from the respondents. A compilation and analysis of the online survey results was completed and delivered as the *Voice of the Customer*.

Further background gathering steps included interviews of key partner agency personnel. The assessment focused on gathering information pertaining to regional service delivery needs, system architecture and technology frameworks along with partner interactions and related agency requirements. From those efforts, the *Partner Interview Report* was compiled which included the identification of regional service opportunities based on the information gathered during the interview process.

Subsequent to the delivery of the *Partner Interview Report,* numerous cooperative GIS working sessions have been conducted with staff from the regional stakeholder agencies as a forum for the

exchange of ideas unconstrained by current thinking. Additional materials developed during those working sessions included a *SWOT Analysis*.

This chapter (*Needs Assessment Findings*) will reference information gathered in the above described phases of the project. It will identify and set out the challenges, gaps, and future pitfalls as well as expand upon the regional service delivery opportunities previously outlined.

Challenges

CPA Challenges, Gaps and Pitfalls

The structure and terms of the current CPA framework give rise to a number of challenges, gaps and pitfalls that need to be addressed as part of the overall restructuring process. Ideally, practical solutions to the identified challenges, gaps and pitfalls will be holistically embodied in the newly defined framework. This will ensure that the partner agencies, stakeholders and subscribers maximize the return on future investments in the CPA enterprise.

Lack of Awareness

CPA partners and stakeholders are generally unaware of goals, objectives, service level agreements or available resources afforded by the CPA framework. As a result, there are unmet expectations, disappointment and long-term frustration that has developed within the CPA policy making membership tier. This also led to a long number of missed opportunities to fully leverage available resources, particularly in the area of remote sensing data procurement. Inter-agency roles, responsibilities and procedures are not always well understood. These circumstances have in some cases manifested as duplication of efforts along with the incubation of a number of data quality issues within the regional GIS ecosystem.

Changing Landscape

The service delivery unit at LCOG is currently unable to keep pace with changing technology. As with the awareness issues identified above, this also has resulted in unmet expectations, disappointment and frustration. The passage of time has led to a marked increase in the capabilities of partner and stakeholder agencies relative to their respective capabilities when the CPA framework was initially established. This introduces the risk of one or more policy making tier members abandoning the CPA framework in favor of going their own way. The present goals, objectives and capabilities of partners are not aligned with existing CPA which also amplifies the risk of one or more key members abandoning the framework and going their own way.

Data

Issues with spatial accuracy, attribute accuracy and currency of data have been reported. There are also reports that remote sensing data resources provide inadequate coverage or utility in some cases. Support for mobile data access is inconsistent or not provided at this time. Unnecessary data duplication and data management overlap is occurring in some cases. Limited metadata is available to guide those who reference the data when making decisions. New layers are needed to satisfy existing unmet needs.

Funding

The current CPA funding model does not align with best practices or meet with partner or CPA expectations and needs. Funding challenges are constraining growth, innovation and new technology implementation across the CPA framework. These challenges are creating uncertainty and impacting staff retention at LCOG.

Workload

The current workload at LCOG is characterized as extreme and not sustainable. Accordingly, LCOG is reactive and unable to renew or improve service offerings. Project delivery may take years with the current level of backlog which adds to the frustration and disappointment expressed by key policy making partners. Staff at LOCG are unable to focus on top priorities due to being pulled in too many directions at once which is exacerbated by the current environment of pervasive funding challenges.

Technology and System Architecture

RLID is characterized by system users as "too big to fail" and critical to the partner agencies, subscribers and other stakeholders. Notwithstanding this, infrastructure and architecture renewal is overdue which places service delivery and the partners that rely on those services at risk. As with all technology replacement initiatives, RLID architecture renewal may disrupt service delivery once changes are implemented. Integration and interoperability of applications needs improvement in conjunction with architecture and platform renewal.

Resilience and Succession

Staff turnover is impacting service delivery and technology renewal. Further, organizational resilience is impaired due to staff turnover and the need for cross-training of operational staff. Staff succession plans are not defined at this time. Staff turnover is contributing to the overall loss of institutional knowledge which further impacts service delivery.

Governance

The effectiveness of existing CPA governance is weak due to staff turnover and other factors. Key performance indicators for the CPA are not defined, measured or monitored. KPI's are an important component in support of organizational accountability and transparency. Internal GIS/IT governance within LCOG needs improvement in order to better support service delivery. A potential for bias and/or conflicts of interest exist in the current environment.

Training, Education and Knowledge Transfer

Historically, there has been limited investment in this area. Service documentation needs to be developed to improve end user understanding of system procedures capabilities. Insufficient staff contact amongst partner agencies is contributing to the current low effectiveness of training, education and knowledge transfer.

Needs

CPA Needs

Funding

The most pressing need is for the current CPA funding model to be restructured to align with best practices and to better meet with partner and stakeholder needs in terms of equity and value received relative to the contributions provided by the funding agencies. Sustainable funding certainty must be established to ensure that existing barriers that are constraining growth, innovation and new technology implementation are eliminated.

Technology and System Architecture

A renewal program for the physical infrastructure that hosts RLID and software architecture that powers RLID very much needs to be developed. This need is second only to the identified need to restructure the CPA funding model as continued and uninterrupted operation of this platform is critical to the partner agencies, subscribers and other stakeholders that rely upon it. Renewal of this platform with also provide opportunities to improve the integration and interoperability of applications that reference the existing RLID facility.

The RLID Website has seen some updates over the past several years. The original version queried the warehouse directly, but this required direct changes to the warehouse itself and was inefficient. The current version is RLID Web App V3 and data is now pulled from the warehouse and is pre-processed before being fed to the web app. This does not require heavy processing, but just displays the data and desired information resulting in much improved efficiencies. It is critical that RLID be updated to a newer platform than the current ColdFusion solution. Maintenance of the solution is becoming more of a challenge, relying on specific staff or consultants to keep the application up and running.

There is a deadline during Q1 of 2019 for LCOG to migrate RLID and its components from an outdated server infrastructure and Lane County data center. LCOG must determine if current IT infrastructure

can sustain the needs of RLID or if the solution should be placed on a cloud solution. This step is important as LCOG will need to ensure the functionality of RLID is not lost during this transition and that it continues to operate as efficiently as it is currently.

Governance

The effectiveness of CPA governance needs to be restored. The will involve the re-establishment of sub-committees as per previous historical practice at LCOG and other measures. It is critical that sub-committees be re-established and occur on a regular basis with steady attendance and participation. Key performance indicators for the CPA will need to be defined, measured or monitored to improve organizational accountability and transparency. Internal GIS/IT governance within LCOG needs improvement in order to better support service delivery. Inter-agency communication and engagement should be expanded. Clear lines of responsibility will need to be agreed upon, established and documented. Any potential for bias and/or conflicts of interest need to be addressed through the development and implementation of specific polices and guidelines.

Workload

The available resources and any new resourcing at LCOG that is developed through the CPA renewal process need to be refocused on what LCOG does best. This includes RLID, data warehousing, regional project management, regional data aggregation and related product and service delivery. The existing backlog needs to be reviewed to ensure that any projects that do not fall within these criteria are reassigned to other resources. These measures will ensure that project delivery is completed within acceptable timelines and ensure that staff at LCOG are able to focus on identified priorities.

LCOG Regional Center of Geospatial Excellence

Consideration should be given to establishing a regional center of geospatial excellence at LCOG. The role of the center would be to encourage and support innovation in GIS through research and the development and promotion of enterprise GIS operational best practices. Additional needs for the center include the establishment of programs to facilitate GIS related training, education and knowledge transfer across the region.

Services offered at the center could include software and solutions research, development and testing along with business analysis functions. Staff at the center could also manage projects and

procurement for regional remote sensing programs and other projects related to regional service delivery. Regional partners would continue to enjoy the access to consulting services and the subject matter experts at LCOG to which they currently have access. In addition to the continuing operation and renewal of the RLID platform, the center should be provided the resources needed to develop and tailor specific regional products for economic development, critical infrastructure, emergency response and public safety.

Regional Data Collection, Management and Distribution

The existing role of LCOG as the regional data aggregation facility should be expanded to include the processing and delivery of critical infrastructure, emergency response and public safety products and service in addition to products provisioned through RLID. Wildfires and other calamities do not respect jurisdictional boundaries, so it is important that the agencies that are tasked with responding to these incidents be provided with authoritative, consistent and trusted datasets across the regional landscape. These efforts would be focused at their core on remote sensing data products, addressing, parcels, structure outlines, road centerlines and utility infrastructure. The datasets required to provide support at the regional level:

- Addressing
- Street centerlines
- Building outlines, use and occupant load
- Parcels
- AED locations
- Emergency response zones for fire, medical and other
- MSAGs
- Vertical and oblique aerial photography
- LIDAR derived DTM and DSM
- Telecommunications and fiber optic networks
- Power transmission and distribution grid

- Natural gas
- Water supply and distribution
- Sanitary sewer
- Storm water

Using the above listed regional datasets, the following business processes can be supported:

- 911 primary and secondary answering points
- Routing for emergency response and fleet operations
- Crime analysis
- Common Operating Picture for enhanced emergency response situational awareness
- Utility outage management

Continued work in this area will involve the further development of existing ETL processes to normalize and align data schemas and content in preparation for loading into the data warehouse for publishing and distribution.

The development of additional procedures and workflows are needed to address the reported issues pertaining to spatial accuracy and attribute accuracy. Efforts should be aimed at eliminating any unnecessary data duplication and data management overlap that is known to be taking place. A review of programs that provide remote sensing data should be undertaken to ensure that there is adequate coverage and image quality to meet all of the policy making partner's needs. Investments in the development of a regional open data platform should be considered. The provision of services through the platform would be access controlled for the benefit of regional stakeholder use. Open data that is published on the platform could be consumed by a wide variety of desktop and mobile applications. This would improve support for mobile data access that is currently inconsistent or not provided at this time. Investments in the development of a region wide metadata platform should be considered. Publication of metadata from that platform would then be available to guide those who

reference the data when making decisions. The development of several new layers of data are required to satisfy existing unmet needs in this area.

Software Licensing

Consideration should be given towards further leveraging CPA Esri licensing through a statewide licensing initiative. Consideration should also be given to expanding the available license pool to include more extensions and create opportunities to utilize ArcGIS Online.

Training, Education and Knowledge Transfer

Ideally, improvements in the area of training, education and knowledge transfer can be developed through the proposed LCOG Regional Center of Geospatial Excellence. In the event that is not possible, then at minimum, investments should be made to improve documentation that will increase end user understanding of system procedures capabilities.

Additional Regional Data Aggregation

If desired, additional support for regional economic development activities could be provided through the collection, aggregation and distribution of the following economic development related datasets:

- Demographic and related census data, including employment data
- Parcel zoning and permitted land use
- Business enterprise development and tax incentive zones, if any
- Access metrics and proximity to workforce
- Existing business profile data, type of business by NAICS and related classification criteria
- Inventory of potential business development sites including vacant lands and facilities

In a similar fashion, additional support for regional planning initiatives could be provided for the capital project, environmental, land use, public health and transportation and other realms by provisioning region wide layers for:

- Lakes, rivers, wetlands and riparian habitats

- Epidemiology
- Public transit and transportation
- Metropolitan Planning Organizations (MPO) datasets
- Capital project planning
- Parks

Key Performance Indicators (KPIs)

Introduction

The following section outlines the identified and recommended Key Performance Indicator's (KPIs) for LCOG and the Partner Agencies. These KPIs should be regularly revisited and tracked to ensure the program is moving forward in the desired manner. The KPIs are divided into the six pillars of GIS sustainability: Governance, Data and Databases, Procedures and Workflow, GIS Software, GIS Training, and Infrastructure. Some of the KPIs have a short shelf life (i.e. migrate RLID from the antiquated infrastructure and existing data center) and can be replaced or removed after completion. Other KPIs have a longer lifespan and will continue to evolve and be monitored for years to come.

Governance KPI Table

Task	**KPI**	**Goal**
Task 1: Clearly identify LCOG staff and their roles and responsibilities. Once this is complete, distribute to the Partner agencies to ensure they know who to contact for what service(s).	Document detailing LCOG staff and responsibilities.	Develop and share with Partners.
Task 2: Update annually an Enterprise GIS Master Plan	Number of consecutive years plan has been updated.	Trend Upwards
	Percent of strategic goals met in previous year.	Equal to number of goals
Task 3: Develop a GIS vision, goals, and objectives	Percent of organizational strategic goals supported by at least one GIS strategic goal.	100%
Task 4: Re-establish sub-committees and meet on a regular/scheduled basis	Number of sub-committee meetings that occur annually along with attendance levels	Trend Upwards

Task	KPI	Goal
Task 5: Continue holding GIS steering committee meetings, led by LCOG with attendance from each Partner agency	Number of GIS Steering Committee meetings annually	No less than 10
	Percent of GIS Steering Committee members attending each meeting	90%
Task 6: Regionalization of GIS – re-establish LCOG as the regional center for GIS in Lane County	Number of RLID subscribers.	Trend Upwards
	Number of CPA Partners.	Trend Upwards
Task 7: GIS policy and mandates	Number of consecutive years policies reviewed/updated.	Trend Upwards
Task 8: Measure user sensitivity	Number of consecutive years user sensitivity survey data collected, and focus group held.	Trend Upwards
	Average measure of user sensitivity (develop metric from survey and/or focus group data)	Develop Metric - Trend Upwards
Task 9: Improve GIS collaboration	Number of regional GIS implementations/projects within previous year.	Generally, Trend Upwards
	Estimate of ROI on regional workgroup GIS implementations/projects within previous year.	Trend Upwards
Task 10: Measure quality of service	Number of consecutive years quality of service survey data collected, and/or focus group held.	Trend Upwards
	Average GIS User satisfaction level (develop metric from survey and focus group data)	Develop Metric - Trend Upwards
Task 11: Ensure customer requests are handled efficiently and by the appropriate staff at LCOG	Track the time required for monthly GIS requests made to LCOG to be completed	Trend Downwards
Task 12: Establish a sustainable funding model for LCOG through a revamped CPA and RLID offering	Number of new RLID subscribers and potential CPA Partners annually.	Trend Upwards
	Percent of annual GIS budget cut.	0%
Task 13: Explore GIS grants and funding initiatives for LCOG	Estimated ROI from GIS grants in previous year.	Trend Upwards

Task	KPI	Goal
Task 14: Develop an annual detailed GIS work plan	Number of consecutive years a GIS work plan has been developed.	Trend Upwards
	Percent of GIS projects on schedule per work plan at end of year.	100%
Task 15: GIS coordination tasks	Percent of GIS Projects and initiatives defined on annual GIS work plan with on schedule status at end of year.	100%
Task 16: Develop Key Performance Indicators (KPIs) for the GIS initiative	Number of KPIs utilized for annual GIS strategic planning.	Remain Constant
Task 17: Create a GIS blog or newsletter	Number of GIS newsletters sent annually.	12
Task 18: Create and maintain a GIS culture of collaboration among stakeholders	Number of GIS newsletter contributors annually.	Trend Upwards
	Number of GIS user group presenters annually.	Trend Upwards
	Number of GIS Training session attendees annually.	Trend Upwards
Task 19: Alignment with LCOG's overall vision, goals, and objectives (Resilience Strategy)	Number of consecutive years LCOG's Resilience Strategy aligned with the Enterprise GIS Program's vision, goals, and objectives.	Trend Upwards
Task 20: Develop and distribute Service Level Agreements (SLAs) to ALL stakeholders	Ratio of unplanned GIS system downtime versus SLA defined unplanned downtime.	1/1
	Ratio of GIS service requests competed on time.	1/1
Task 21: Develop a New Staffing Plan to lessen the amount of turnover	GIS staff turnover within LCOG	Trend Downwards
Task 22: Training Plan	Number of GIS training courses completed per staff member.	Trend Upwards
	Number of employees that have completed recommended GIS training.	Trend Upwards

Data and Databases KPI Table

Task	KPI	Goal
Task 1: Perform a deep dive detailed digital data assessment of all GIS layers that LCOG is responsible for	Percent of dataset QA/QC recommendations competed.	100%
Task 2: Improve the existing Master Data List (MDL)	Number of requests for the location or background on data layers.	Trending Downwards
Task 3: Fully implement metadata for all GIS data	Percent of GIS datasets with complete and compliant metadata.	100%
Task 4: Evaluate the possibility of migrating to the Local Government Information Model	Number of datasets to migrate to the LGIM.	TBD
Task 5: Enterprise review of the current database design	Percent GIS datasets reviewed.	100%
Task 6: Develop, formalize, and enforce standardized GIS data creation procedures across the enterprise	Percent of GIS data creators trained on new data creation related SOPs.	100%
	Annual number of GIS data creation corrective actions.	Trend Downwards
Task 7: Continue to use and enforce a GIS central repository – corporate style data warehouse	Number of known GIS datasets maintained outside of the enterprise geodatabase – updated annually.	0
Task 8: Develop a GIS Mobile Plan to guide the development of Mobile Solutions in the Region	Number of field workflows improved via mobile GIS solutions.	Trend Upwards
	Combined estimated annual ROI from deployed mobile solutions.	Trend Upwards
Task 9: Identify a strategy for open data/open government	Number of open datasets published.	Trend Upwards

Task	**KPI**	**Goal**
	Number of community/regional based applications of open data.	Trend Upwards
Task 10: Upgrade the existing GIS servers to a modern better performing technology and consider migrating the GIS servers to the Amazon EC2 Cloud	Estimated annual ROI from cloud migration.	Trend Upwards – Relevant post cloud migration.

Procedures and Workflow KPI Table

Task	KPI	Goal
Task 1: Review current enterprise integration and deployment strategies and update to reflect changes in technology	Number of systems integrated with GIS.	Trend Upwards
	Estimated ROI from GIS integration.	Trend Upwards
Task 2: Continue to identify opportunities and gaps for using GIS to improve procedures and workflow	Number procedures and workflows identified for GIS integration solutions.	Trend Upwards
Task 3: Improve Partner and subscriber access to critical data layers	Number of Partners and subscribers with access to GIS data.	Trend Upwards
Task 4: Develop Standard Operating Procedures for major IT/GIS functions	Number of staff provided and trained on Best Practices and SOPs.	Trend Upwards
Task 5: Develop GIS Data Maintenance Procedures	Number of staff provided and trained on Data Ownership and Data Maintenance Policy.	Trend Upwards
Task 6: Eliminate data duplication between systems	Number of duplicated datasets.	0
Task 7: Continue to use and improve LCOG's existing GIS technical support (ticketing/help desk) strategy	Number of GIS tickets closed monthly	Trend Upwards
Task 8: Improve Partner and subscriber use of GIS	Partner and subscriber percent GIS utilization.	100%

GIS Software KPI Table

Task	KPI	Goal
Task 1: Continue to work with Esri to identify a licensing model that works for LCOG and its Partners	Percent of needed EA available software installed and configured, and training utilized by enterprise.	100%
Task 2: Leverage commercial off-the-shelf GIS solutions versus custom code where possible (not including RLID)	Percent GIS solutions implemented with COTS deployment.	Trend Upwards
Task 3: Continue to promote access to software through a variety of solutions	Ratio of staff that have access to GIS versus staff that would benefit from access.	1/1
Task 4: Promote GIS widget development within Esri's Web AppBuilder	ROI from custom widget development.	Trend Upwards
Task 5: Create a roadmap for updating RLID and execute the roadmap	ROI from a new and refreshed RLID solution	Trend Upwards
Task 6: Begin utilizing Esri AGOL and Portal solutions – including the Collector Application and dashboard solutions	Estimated ROI from AGOL and Portal solution deployments.	Trend Upwards
Task 7: Utilize GIS for LCOG Executive Meetings	Estimated ROI from GIS solutions for executives.	Trend Upwards
Task 8: Utilize mobile GIS software	Estimated ROI from deployed mobile GIS solutions.	Trend Upwards
Task 9: Identify where Global Positioning System GPS technology could be used	Estimated ROI from deployed GPS technology solutions.	Trend Upwards

GIS Training KPI Table

Task	KPI	Goal
Task 1: Develop a formal ongoing GIS training plan to include LCOG and Partner agency staff (Regional Approach)	Number of employees completing required training.	Trend Upwards
	Number of regional GIS solutions deployed as a result of completed training.	Trend Upwards
Task 2: Conduct multi-tiered GIS software training	Number of staff completing required training.	Trend Upwards
Task 3: Conduct mobile software training	Number of GIS users completing recommended mobile GIS training.	Trend Upwards
	Number of regional mobile GIS solutions deployed because of completed training.	Trend Upwards
Task 4: Conduct departmental-specific education	Number of Partner-specific training opportunities annually.	10
Task 5: Conduct ROI workshops	Number of ROI workshops conducted annually.	2
Task 6: Implement knowledge transfer techniques	Number of GIS knowledge sharing opportunities offered annually.	12
	Estimate of ROI realized from knowledge transfer opportunities.	Trend Upwards
Task 7: Attend conferences	Number of GIS users attending GIS conferences annually.	Trend Upwards
Task 8: Take advantage of online seminars and workshops	Number of online GIS seminars and workshops attended by GIS users.	Trend Upwards
Task 9: Conduct brown bag lunches	Brown bag lunches held annually.	12
	Average brown bag lunch attendance.	Trend Upwards or Remain Consistent
Task 10: Establish GIS succession planning	Number of succession planning activities/training conducted annually.	6

Infrastructure KPI Table

Task	KPI	Goal
Task 1: Develop an enterprise GIS architectural design	Number consecutive years the enterprise GIS architectural design has been reviewed and updated.	Trend Upwards
Task 2: Migrate existing RLID application from antiquated hardware and data center to a new system (potentially cloud based)	Migration of RLID application and components to a secure and stable environment	Completion by Deadline
Task 3: Review IT infrastructure as it pertains to the GIS initiative	Number and duration of annual unscheduled GIS system downtime.	Trend Downwards
Task 4: Review the IT replacement plan annually as it relates to the GIS initiative	Number of annual GIS service requests related to hardware limitations.	Trend Downwards
	Number of annual GIS service requests related to software issues and version limitations.	Trend Downwards
Task 5: GIS Training should be provided to IT Professionals to allow them to better support the enterprise GIS	Number of enterprise IT staff attending GIS training.	Trend Upwards
Task 6: Continue to track 24/7 IT availability for the GIS program	Annual hours of unscheduled GIS system downtime.	Trend Downwards
Task 7: Leverage industry standard enterprise backup procedures and protocols	Number of GIS system backups annually.	Trend Downwards
Task 8: Review IT, hardware, and mobile standards	Number of reported IT issues related to GIS system components that are not compliant with current standards.	Trend Downwards
Task 9: Develop GIS mobile action plan	Estimated ROI from mobile GIS deployments.	Trend Upwards
Task 10: Deploy and maintain GIS development and staging environments that replicate the GIS production environment.	Amount of unplanned downtime to GIS development and staging environments.	Trend Downwards

Task	**KPI**	**Goal**
Task 11: Continue periodic monitoring of the LAN/WAN network to ensure it is functioning at optimal levels	Number of GIS user issues reported annually related to network performance.	Trend Downwards

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