

# Strategic Analysis For Geographical Information Systems at the City of Walnut Creek

Prepared By  
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## A. EXECUTIVE SUMMARY

### **Purpose of This Plan**

The goal of this document is to provide the City with guidance in how maximize its investment in GIS. This is accomplished by first describing the status of the City's GIS implementation – particularly as it aligns with the needs and expectations of end-users who can (or should) rely on the GIS to support business processes within the City's departments.

Building on the current status, we propose a series of strategic recommendations that provide high level guidance on technical approaches and business practices that will improve the value that the City's GIS provides. Finally, we suggest a series of specific next steps that we believe the City should undertake in the short term to jumpstart our strategic recommendations.

### **Assessment Overview**

Farallon commonly uses the [GIS Maturity Model - published by URISA](#) - as a benchmark for quickly communicating our assessment of the sophistication of any group's GIS capabilities. The GIS Maturity Model classifies five levels of maturity. They are:

**Level 1 – Enthusiast:**

Individuals with interest and drive obtain GIS tools on an ad-hoc basis to support their own deliverables.

**Level 2 – Department Based:**

Specific departments within the larger organization recognize the value of building GIS capability for their internal use and deploy some internal department-wide capability.

**Level 3 – Centralized:**

A department-based GIS program evolves into a centralized program that serves all departments of the organization in order to reduce duplicative effort and standardize workflows and data.

**Level 4 – Integrated:**

The centralized GIS group looks beyond standardizing internal workflows, and looks at how it can influence and enhance operational workflows with the use of enterprise applications.

**Level 5 – Enterprise:**

There is a GIS Strategic Plan which is aligned with the overall IT strategic plan. The integration between GIS and other business applications is seamless and often invisible to end-users who benefit from it.

*Credit to W4Sight:*

[http://www.w4sight.com/uploads/1/4/3/8/14386328/w4paper\\_gismaturity.pdf](http://www.w4sight.com/uploads/1/4/3/8/14386328/w4paper_gismaturity.pdf)

Our assessment is that Walnut Creek has the technical components of a Level 5 system, but is functionally operating at Level 3. It would be reasonable to assert that the City was at Level 4 before the legacy MapGuide-based GIS viewer application was retired. End-users perception, however, is that the replacement is not currently meeting needs due to performance and usability issues.

The good news is that the City's newly-deployed Esri/Geocortex-based technology is completely up to the task of meeting and surpassing requirements. These products have proven many times over to function very well in municipal government organizations and beyond. However, even the best enterprise software requires ongoing attention to evolving requirements and specific technical skills to assure that the implementation is tuned to perform in your unique IT and business ecosystem. Our assessment is that the new Esri implementation requires more effort to get it into optimal working order.

We believe our proposed short term recommendations can quickly raise the City to Level 4. Level 5 will be accomplished through persistent implementation of our proposed long term recommendations.

## Strategic Recommendations

### Short Term

- Achieve Feature Parity With Legacy GIS

The current set of GIS tools available to end-users need to meet or exceed the capabilities, performance, and usability that were provided by the legacy MapGuide-based applications. Unfortunately, end-users see the new application as slow and difficult to use.

Toward that end, the City should contract for assistance to review and optimize the Parcel Reporting Tool, and, if necessary, deploy other tools that will allow end-users to accomplish those tasks with the same efficiency as before. If a single, monolithic GIS application is too unwieldy to effectively meet all needs, we suggest that template ArcGIS For Local Government applications could augment the solution.

As part of the implementation, workflow documents and training should be developed to support end-users in maximizing the GIS tools to accomplish the most common workflows such as parcel reporting and developing notifications based on parcel buffers.

- Restart Formalized GIS Governance

Farallon recommends that the City form an Executive-level GIS Steering Committee for the purpose of providing ongoing management and prioritization of the City's Enterprise GIS activities. The goal of this committee will be to provide high level direction, accountability, and to ensure that funding is in place to accomplish prioritized GIS objectives.

### Long Term

- Leverage ArcGIS For Local Government Solutions

The City should leverage Esri's ArcGIS For Local Government applications as a strategic approach to meeting business needs while minimizing custom software development and maintenance costs.

ArcGIS For Local Government is a series of solution templates (mobile and web applications, pre-made ArcGIS workflows for data maintenance, pre-made basemap services) provided by Esri to support common workflows in local government.

In addition to supporting internal workflows, many ArcGIS For Local Government solutions provide a means to share data with the public and external stakeholder organizations through web and mobile platforms.

- Delegate Data Maintenance Responsibilities to End-User Departments

Some interviewees expressed concerns and/or confusion about how their data is being collected and maintained and who makes decisions about how their data is displayed. The purpose of this goal is to evaluate on a layer by layer basis which department should be responsible for data collection and maintenance, and then provide that department with the tools and resources necessary to shoulder that responsibility.

- Apply GIS as a Resource for Business Systems

This means applying GIS as a resource that can be used to enhance other business systems such as Asset Management, Permit Management, and Document Management. While there is a place for quick-win GIS applications (such as the Parcel Reporting Tool) departments should consider how the Citywide GIS can enhance existing business applications such as CMMS and Permit Management.

## B. PLAN DEVELOPMENT PROCESS

This GIS Strategic Plan is based on a review of existing data and system components, interviews with stakeholder staff within the City and a writing and revision process that solicited feedback from City staff.

Farallon's initial steps were to review the suite of applications and solutions provided to GIS users at the City and to take a close look at the data that supports these solutions. Working with GIS and IT staff, we came to understand the City's technical GIS environment and the business environment in which it operates.

With this background technical knowledge in hand, we spent two full days onsite interviewing various GIS stakeholder staff throughout the City. Those interviews included the following departments and people:

### Public Works

- Ryan Cook
- Oliver Cheung
- Carlton Thompson
- Steven Waymire
- Scott Wikstrom
- Heather Ballenger

### Planning

- Sandra Meyer
- Andrew Smith
- Steve Buckley
- Ken Nodder
- Cara Butista-Rao

### Community and Economic Development

- Ethan Bindernagel
- Frank Kong

### Open Space

- Kathy Meyer
- Rich Payne
- Mike Vickers
- Gina Eicher

### Police Department

- Chastity Ledford
- Denise Joseph

### Information Technology

- Ray Lam
- Jeff MohlenKamp

With the information collected in the interviews, we developed a strawman strategic plan document that layed out the outline for the final plan and identified City staff input, and Farallon's observations and recommendations that we are making. These were reviewed and approved by City staff.

Lastly, the final draft was developed and provided to the City for one last round of review.

## C. SITUATION ASSESSMENT

The Situation Assessment summarizes the current GIS technical environment and identifies GIS-related staffing

### C.1 GIS PROGRAM ENVIRONMENT

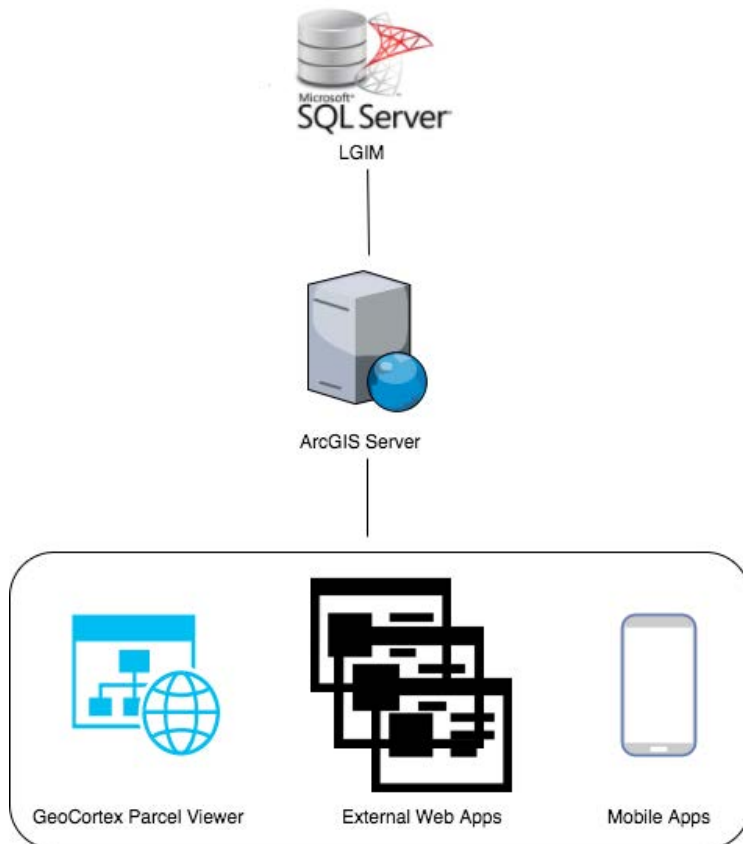
#### Technical Environment:

The City has implemented an Esri-centric GIS environment based on Esri best practice architecture and the Local Government Information Model. The backend database management software for the LGIM is Microsoft SQL Server and end-user applications are supported with web services generated using ArcGIS For Server.

The City uses Geocortex as the platform for its flagship GIS data viewing application The Parcel Reporting Tool. The City also uses ArcGIS a number of read-only web applications including: Walnut Creek Open Space, Affordable Rental Housing, Capital Improvement Projects, New Development Projects.

Lastly, the City makes effective use of ArcGIS Collector for field data collection projects using mobile devices. Projects for which this has been deployed include Storm Drain and Tree inventories.

#### GIS Architecture Overview



Staffing:

Citywide GIS is managed from within the City's central IT department. The GIS group handles all management of GIS servers and applications, and shoulders most of the responsibility for data updates – particularly for data sets that are periodically imported into the City's database from an external source – such as parcels. GIS staff also handle day to day maintenance of address point data within the City's Enterprise Addressing System.

Dedicated GIS staff include:

- Phil Beilin – The City's GIS Manager
- Mojgan Rahimi – GIS Specialist
- 2 to 3 rotating GIS interns handle GIS data maintenance

Various departmental staff – particularly within Engineering – are responsible for maintenance of utility asset layers that link with Cartegraph asset management. However, it was noted that this responsibility tends to be deprioritized relative to other Engineering-related tasks.

## C.2 CURRENT GIS USAGE: BENEFITS, PAINPOINTS, AND REQUESTS

This section documents the information gathered from end-users in our interviews. Comments were edited for brevity, but preserve the perspective and opinions of the City of Walnut Creek staff who shared them. In some cases, editorial comment from Farallon is added. These are prefixed with "NOTE".

Comments provided by end-users are categorized as:

**Benefits:** These define the perceived and communicated benefits of the existing GIS program to the business unit. These benefits may be qualitative or quantitative.

**Pain Points:** A pain point is a problem – real or perceived. In this context, we are looking for areas where end-users experience frustration in using the GIS applications.

**Requests:** These are specific requests for change or improvement in the GIS applications or data.

**Additional Notes:** This is a catch-all to make sure that useful end-user feedback is captured in this document.

### C.2.1 PUBLIC WORKS

Benefits:

- Was easy to incorporate FEMA flood data map services into existing application. Supported capital improvement decisions.
- GIS Connect supports ability to view GIS asset features with Cartegraph data on a map
- Success in collected GIS data for Trip Hazards and Catch Basins

Pain Points:

- Parcel Reporting Tool
  - App lacks some data that was previously available in MapGuide.
  - Text seems to shrink as a user zooms to tighter zoom scales
  - App seems to jump from one zoom scale to another without user input

Note: When pressed, it seemed less that the data are missing, and more that users have a hard time finding relevant layers due to slowness of the application, and lack of a clear organization scheme for available data within the application.

- Need more accurate storm pipe data to support regulatory reporting requirements.  
NOTE: This supports a need to prioritize maintenance of this information within Public Works.
- Spatial data depicting location of assets in GIS not maintained as new assets are added/retired in Cartegraph.

Requests:

- PW-R1 Collect more asset information specifically infrastructure. Does not currently exist in a digital inventory. Storm Drains important next target then pipe data.
- PW-R2 More training/easier access to capabilities of Parcel Reporting Tool. Specifically interested in better using advanced search.
- PW-R3 More consistent layer naming, ordering and styling in The Parcel Reporting Tool.
- PW-R4 Ability to share street and pavement information with local utilities via a web service.
- PW-R5 Would like a better workflow to pull data from AutoCAD drawings into the GIS – specifically for architectural data.
- NOTE: Solutions here could include a published CAD data standard (drawing schema) that builders are encouraged to submit drawings within or a process to make GIS base data available for use in Autocad.
- PW-R6 Addition of Google Street View plugin to GeoCortex app ([http://moval.geocortex.com/Html5Viewer/index.html?viewer=comv\\_hv](http://moval.geocortex.com/Html5Viewer/index.html?viewer=comv_hv)).
- PW-R7 Mobile data collection with cooperation between inspectors, pavement management, and infrastructure planning.
- PW-R8 Interested in more sophisticated culvert management. Have been involved with litigation regarding culverts before.
- NOTE: We know from experience that culverts are a tricky feature to model geometrically. Some make more sense as points while others make more sense as lines. Farallon can share practical solutions deployed with other clients for culvert modeling.

Additional Notes:

- Getting ready to deploy Tyler Munis for enterprise resource planning.

NOTE: It would be ideal to have a GIS integration approach in place ahead of Tyler Munis implementation. Development of such technical approaches is consistent with Recommendation D5.

**C.2.2 OPEN SPACE**

Benefits:

- Use GIS to cross-check ownership of assets. For the most part, features captured in GIS are city-owned.
- Attach GIS-generated map images to work orders to assist field crew in finding them

- GIS staff supported creation of tree inventory using a ArcGIS Collector App
- Created park infrastructure inventory to support ownership analysis and field maps
- Digitized trip hazards and curb cuts for ADA compliance
- ArcGIS Collector platform meets field data collection needs very efficiently

Pain Points:

- Parcel Reporting Tool slow and difficult to navigate.
- Unaware of Parcel Reporting updates or new features available to them.

NOTE: This comment came out of us asking about about advanced search. They were unaware that it exists.

- Integration with Cartegraph using GIS Connect is slow and cumbersome.

NOTE: This makes good sense given that GIS Connect is based on old client-server approach to integration. To meet user expectations in 2017, a web-based approach to viewing integrated data will perform much better.

- Integration with Cartegraph unreliable due to features existing in Cartegraph but not GIS.

Requests:

- |       |  |
|-------|--|
| OS-R1 | More training/easier access to capabilities of Parcel Reporting Tool.  |
| OS-R2 | More consistent layer naming and ordering and styling in Parcel Reporting Tool.  |
| OS-R3 | Wants ability to interact with Permitting Data using GIS in a similar manner to current access to Asset Management (Cartegraph) via GIS. |
| OS-R4 | Would like to switch from Cartegraph to Tyler Munis to support deeper integration with other departments.                                |

NOTE: While this is not on its surface a GIS-specific request, it does beg the question for which business systems vendor should a GIS integration be engineered.

### C.2.3 POLICE DEPARTMENT

Benefits:

- Crime analysis support with data from RMS
- Update dispatch maps with data from GIS

NOTE: Notably missing from this list is the ability to use GIS as a user-friendly means to develop and maintain the City's CAD geofile. Further, rich point-based address data developed and maintained with EAS has enormous potential to benefit CAD workflows.

Pain Points:

- Parcel Reporting Tool slow and difficult to navigate.

- Parcel Reporting Tool has too many layers to wade through. Fire hydrants layer specified as a layer they would prefer to not see.
- Need more training both at a high theoretical level, so they know what is possible with GIS and at a lower level, to complete their specific workflows.

Requests:

- PD-R1 More general/theoretical GIS training, potentially offsite.
- PD-R2 Private security camera registration and location display, possibly integrated with permitting (https://map.santaclaraca.gov/public/index.html?viewer=regional).
- PD-R3 Mobile data collection app (specifically for homeless encampments) that's simple/fast enough for officers to use in the field.

NOTE: There may be a use case for an ArcGIS Collector App to support this request.

Additional Notes:

- NOTE: CAD/GIS integration generally considers two integration points. The first is support for geofile development and maintenance. Geofiles are the text-based files that enable a dispatch system to very quickly translate an incoming phone number or GPS location into an address to which dispatchers can send responders. The second integration point is map display for active dispatch events and live-locations of in-field responders.
- NOTE: Reconciliation of MAD features (addresses and streets) with Versaterm file has been delayed due to inability of Versaterm to consume tile data.

### C.2.4 PLANNING

Benefits:

NOTE: Interviewed staff were unable to articulate any specific benefits provided to the department. Alan Carreon (Planning's primary GIS user) was unavailable on the day of the interview.

Pain Points:

- Used to be able to respond to parcel info requests over the phone, but new Parcel Reporting Tool is too slow and difficult to navigate to use while requestor waits on the phone.
- Currently using MetroScan and Google Maps for code enforcement and cartography as an alternative to enterprise GIS tools for data querying. This used to be accomplished with the old MapGuide App.
- Would like to better understand who maintains planning-related GIS data and makes decisions about display of planning layers in the Parcel Reporting Tool.

NOTE: This feels to us like an opening to suggest that Planning staff take responsibility for maintenance of Planning-oriented layers such as zoning, general plan, and addresses.

- Mentioned that they currently use a combination of tools to do record, permitting and document lookup (GIS, Accela, and OnBase)

Requests:

- PL-R1 Ability to perform more specialized and ad-hoc queries.  
NOTE: We recommend that this be facilitated with the use of desktop GIS augmented with training GIS staff in IT.
- PL-R2 Would like for the Parcel Reporting Tool to perform fast enough to allow staff to answer questions while on the phone with customers.
- PL-R3 Integration with Accela and OnBase within GIS.
- PL-R4 Would really like a standardized report template for parcels/properties that can be populated by the GIS and other integrated systems.
- NOTE: Farallon interpretation of this request is that they would like a custom application that gathers parcel data from GIS, Accela, and OnBase for use by Planning staff. It is technically possible that The Parcel Reporting Tool could meet this function.

Additional Notes:

- Noted that Tyler ERP is coming online from the HR/Finance department.
- With previous MapGuide system staff were able to answer a customer's call while on the phone with them.

### C.2.5 COMMUNITY AND ECONOMIC DEVELOPMENT

Benefits:

- Use GIS now to "tell a story" about Walnut Creek to increase business retention and growth.

Pain Points:

- Frustrated by the lack of intuitive interface in Parcel Reporting Tool.

NOTE: Story map requires log-in when you get to a certain point in the story

- GIS Governance meetings faded out due to lack of productivity

Requests:

CED-R1 Would like to integrate more data sources within the GIS (Permitting, taxation, etc.).

CED-R2 Would like to re-establish GIS Governance with renewed focus and direction.

### C.2.6 INFORMATION TECHNOLOGY

Benefits:

Since IT manages GIS, and does not direct use it to support operations, IT staff do not yield specific business benefits. Rather, GIS is a resource that it maintains on behalf of other departments in the City.

Pain Points:

- GIS takes up "50% of IT resources".
  - Unsure whether this is constrained to technology resources (CPU, Network bandwidth, storage, memory) or includes IT staff time as well.
- GIS viewed more as a luxury than a business critical system

Requests:

- |       |  |
|-------|--|
| IT-R1 | Would like to integrate more with external datasets. Specifically, from the county.    |
| IT-R2 | Wishes to explore what is causing performance problems with the Parcel Reporting Tool. |
| IT-R3 | Would like to increase public profile of GIS   |

Additional Notes:

- Many users utilizing virtual desktops to run GIS applications. There is concern that this may be contributing to slow down of GIS.
- Would be open to deploying on remote virtualized platforms such as AWS or Azure to reduce resource strain on internal IT.
- Want to increase awareness among city managers on what's possible with GIS

### C.3 SITUATION ANALYSIS

Significant progress has been made since the City's 2012 GIS Tactical Plan. On the technical front, the City has procured and implemented Esri software and has migrated its spatial data into the new system. On the organizational front, Engineering has taken on ownership of a number of Public Works asset layers within the GIS.

As part of the Esri implementation, the City's GIS Manager made an excellent decision (not specifically recommended in the 2012 Plan) to leverage the Local Government Information Model as the underlying data model for GIS. This decision opens the opportunity to quickly and cheaply deliver a series of Esri-provided mobile, web, and desktop solutions that support common local government workflows.

On the organizational front, Public Work has taken ownership of its own layers which yields benefits by providing improved confidence (or at least understanding) of the quality of its own data, and puts the department in a position to improve its integration with external business systems such as Asset Management.

It is also the case, however, that all departments communicated frustration with the new Parcel Reporting Tool application, and in some cases did not know how business-critical GIS layers are managed. Indeed, many indicated that they have abandoned the City-provided GIS tools entirely in favor of Metro Scan and Google Maps.

We see this outcome fundamentally as a result of a lack of formal GIS Governance, which was a key recommendation in 2012. We understand from our discussions with staff that GIS Governance meetings were convened at some point in the past few years, but that they lost steam due to a lack of focus or direction. In our recommendations below, we outline in more detail how GIS Governance has worked successfully for other municipal agencies.

## D. STRATEGIC RECOMENDATIONS

Below we outline a set of recommendations in order of priority. Our goals with these recommendations are to restore the capabilities previously provided with the City's legacy GIS, improve management of the GIS program as a whole, and then to expand the set of capabilities in a sustainable fashion that is focused on end-user business needs.

### SHORT TERM

## D1. ACHIEVE FEATURE PARITY WITH LEGACY GIS

The value of the City's GIS is currently compromised by a perception that the Geocortex-based Parcel Reporting Tool is less capable and less user-friendly than the legacy MapGuide-based Parcel Reporting Application. This lack of confidence significantly restricts the value of the City's GIS implementation, and should be remedied quickly and forcefully in order to get end-user staff re-engaged with it for conducting day-to-day business.

Many interviewees mentioned issues encountered when trying to use or access web applications. These interviewees comments fell into the following four categories: access, speed, reliability, and usability.

- Access – many people who use virtual workstations reported that the application does not initiate properly on those workstations. These users seem to lack basic access to the application.
- Speed – most users encountered issues with application loading times. These issues were primarily focused on the loading of satellite imagery and dense vector layers such as parcels.
- Reliability – users were unable to access the application from the corps yard. Also, some did not have the link to the latest version of the application.
- Usability – users were not able to easily find the tools they needed and had trouble with simple workflows like ordering layers.

There are really two issues to resolve here. The first is the technical implementation of the Parcel Reporting Tool, and the second is the “marketing” necessary to help end-users have confidence in the tool once the technical issues are resolved.

To address the technical component, we recommend that the City contract for outside help to diagnose and resolve the access, speed, reliability, and usability issues associated with the Parcel Reporting Tool. We should add that the City's network and GIS software tools are modern and support much more complicated deployments than Walnut Creek. Given that, we infer that the fundamental issues have more to do with data modeling, network throughput optimization, and server-side software configuration. These are all fixable issues that can be diagnosed and resolved.

The marketing component should be addressed after feature parity is achieved with a re-rollout event. Part of this should be an effort to provide documentation and training for common workflows. The goal of this will be to provide end-users with the resources they need to be successful with the tools without necessarily having to ask for help from the GIS Group or a colleague.

### **Requests Addressed**

PL-R2  
PL-R5  
OS-R1  
OS-R2  
PW R-2  
PW R-3  
PW R-5  
PW R-6

## D2. RESTART GIS GOVERNANCE ACTIVITIES

Unlike many business systems, a successful GIS is a multi-departmental resource that supports

activities across the organization. To that end, direction, oversight and funding for the enterprise GIS program should come from these end-user departments who benefit from it. To facilitate this, regular governance meetings are required to allow stakeholder departments to have a voice in where time and dollars should be applied to meet needs.

The agenda of each GIS Governance meeting should be based on the following rough outline:

**1. Define New GIS Tasks/Priorities.**

While anyone can bring forth new ideas on specific tasks that GIS staff should focus on, it is generally the GIS Manager's role to work with end-users to maintain a wish-list of projects that would improve the business value of the GIS. Any items brought to the Committee should include an estimated budget and schedule necessary for implementation, and some analysis of the potential for risk surrounding the project.

Further, if the item includes an ongoing, programmatic maintenance component (such as collection of a new data layer), an estimation resources necessary for ongoing maintenance should be provided as part of the discussion when deciding whether to move forward.

It will be the Committee's responsibility to decide whether each project will go forward (or not) and how that project will be resourced.

**2. Review Status of Ongoing Projects/Tasks**

For each ongoing project, review the following:

- o Has the scope of the project changed?
- o Is project on budget? This should consider staff resources in addition to contractor and other more obvious outlays.
- o Is the project on schedule vs what was originally expected/proposed?
- o Are there any blockers causing a slowdown or effecting costs?

The members of this executive committee will be responsible for providing direction to the GIS Manager to keep these projects in-scope, on schedule, and fully resourced.

Farallon recommends that GIS governance committees convene on a monthly basis until Recommendation D1 is completed. At that point, the City may wish to reduce the frequency to a quarterly or semi-annual basis to be mindful of members' time.

Lastly, we wish to specifically mention that the focus of Governance Meetings should not be GIS training, but rather on making decisions about what projects to tackle. Accomplishing that in a single meeting requires preparation from both the facilitator (usually the GIS Manager) and those representing end-user departments on the GIS Committee.

It is common practice for the GIS Manager to prepare Steering Committee members individually before this meeting so that the focus can be on a group discussion over the merits of any given project, rather than on implementation details. GIS Committee members should, in turn, be educated by end-users within their departments on the requests and pain-points of their GIS workflows.

**LONG TERM**

**D3. LEVERAGE ARCGIS FOR LOCAL GOVERNMENT SOLUTIONS**

The City has already invested heavily in Esri licensure, technology deployment, and data migration to LGIM. The value proposition for that investment is not in the LGIM data structure itself, but rather the fact that you can leverage generic, Esri-provided end-user applications. We believe the City should benefit from these solutions.

Applications developed in-house (or with contractors) require ongoing resources to maintain and keep current with underlying enabling technologies. With ArcGIS for Local Government apps, Esri handles this maintenance for you.

We understand that there may be some aversion to ArcGIS for Local Government apps because some apps consume services from ArcGIS Online which is difficult to budget for. This can be mitigated by using services deployed from local servers rather than from ArcGIS Online servers. However, we think you will find that there are many cases where the cost/benefit ratio is in favor of leveraging ArcGIS Online in order to reduce in-house overhead. The key is having a clear understanding of which ArcGIS Online services are expensive, which are inexpensive, and tuning your internal efforts appropriately.

A few examples of ArcGIS for Local Government solution templates include:

- Mobile Apps for field-based collection of:
  - [Signal Inventory](#)
  - [Sign Inventory](#)
  - [Public Parking Inventory](#)
- [Citizen Problem Reporter](#) - allows the general public to submit non-emergency problems (for example, blight, graffiti, trash, pothole, and flooding) in their community from a smartphone, tablet, and desktop computer.
- [Site Selector](#) - used by business owners and corporations to locate available buildings and sites, and combine their property search with key community and business demographic information.
- [Administrative Area Data Manager](#) - used by mapping technicians to inventory and maintain administrative areas (city council areas, school districts, public safety districts, and service boundaries).

A full list of template Esri solutions is available [here](#).

#### D4. DELEGATE GIS DATA MAINTENANCE RESPONSIBILITIES TO END-USER DEPARTMENTS

The role of the GIS group within IT should be to:

- update the GIS database with fresh data obtained from outside sources (such as parcels from the County),
- provide “consulting” for end-user departments as it relates to their GIS processes,
- stand up easy-to-use applications that support staff with querying and viewing GIS data (such as the Parcel Reporting Tool),
- support integrations between GIS and other business systems.

We believe that this structure for delegating data-centric responsibilities to end-users and technology-centric responsibilities to GIS staff within IT is optimal because it ensures that data are maintained by those with the greatest business stake in it (the end-users), and that the technology is geared to support the needs of the organization as a whole.

This recommendation goes hand in hand with recommendation D3. More active data maintenance may be required to leverage the full capabilities of some of the ArcGIS LGIM applications. As an example, storm water utility features (mains, service lines, and appurtenances) will need to be topologically consistent (touch each other at endpoints of lines) order to utilize the storm water

system maintenance applications and analysis functionalities such as network tracing.

It is expected that, depending on the initial quality of the data and the frequency of update, this work will require someone working within or with each department part time. The exact amount of time will need to be determined by the GIS Steering committee and will vary from department to department based on the specific data they agree to maintain.

We understand that this recommendation has implications for allocation of resources across departments and this will require executive-level involvement to properly address. Resourcing issues of this kind are an appropriate role of the GIS Steering Committee.

**Requests Addressed**

PL-R1  
PD-R1

**D5. APPLY GIS AS A RESOURCE FOR OTHER BUSINESS SYSTEMS**

There are many peripheral business systems at Walnut Creek that could be enhanced by an improved integration with GIS. Examples are: Tyler Munis, OnBase, Accela, and Versaterm. The key component of reaching the Level 5 of URISA GIS maturity model and a common request from interviewees is integration with the City's line-of-business systems.

Any integration project should begin by defining the business need that the integration supports, and by extension, begin preparing effected staff for the workflow changes that will result from the integration. Business need, in turn, should inform the technical approach for integration. Depending on needs, differing architectural tiers could drive the integration (database, services, presentation).

Any integration will require that the question be asked and answered on how features in GIS should link to records in the business system. This may be as simple as a shared ID for cases where the correspondence is 1 to 1, or it could require a sophisticated data modeling approach such as linear reference systems and dynamic segmentation.

Often the business system vendors (i.e. Accela or Cartegraph) provide the technologies that support the integrations, but they most always de-emphasize the effort required to develop and maintain the integrated data itself. Therefore, every GIS integration project should consider the resources required develop integrated data and to maintain it on an ongoing basis.

Finally, the rollout of an integration usually includes the rollout of a new business tool that supports some operational aspect of the organization. End-users must be trained in these new tools and encouraged to modify their business practice in a manner that fully leverages the benefits of the GIS integration.

**Requests Addressed**

CED-R1  
PL-R3  
PL-R4  
OS-R3  
OS-R4  
OS-R5