2016

Newport Beach GIS Strategic Plan

NEWPORT BEACH'S COMPREHENSIVE ASSESSMENT AND LONG-RANGE VIEW OF GIS

PREPARED BY THE CITY'S IT DIVISION

NEWPORT BEACH GIS

PURPOSE

The purpose of this GIS (Geographic Information System) Strategic Plan is to define a common unified vision and establish standards and policies that will improves the effectiveness and efficiency of the city's use of GIS technology. This plan evaluates present conditions and makes recommendations on how to advance the future of GIS at the city.

BACKGROUND

The City of Newport Beach has a long history of GIS which started in the late 1980's on UNIX machines running the GIS software "Genamap" from the company Genasys, with the emphasis being on building out the many base layers through the use of recorded documents, digitizing, and later, using GPS. At that time, GIS Data was communicated through the use of paper maps that staff and field crews heavily relined on.

In the late 1990's, the city's GIS software transitioned to a company named ESRI and the emphasis began to shift from paper maps to web based maps and solutions, as well as integration and support for a number of systems around the city. In 2002, the first web based map viewer was launched which provided staff with the ability to retrieve basic attribute information for a particular address or parcel. As staff became more reliant on this new web based technology, more information was requested and subsequently accommodated through the map viewer. In 2014, the software product Goecortex was purchased which allowed for rapid configuration and deployment of web map viewers to keep up with technology and demand. As the city began to fully realize the potential and power of GIS so did its role within the organization. GIS Staff now manages and/or maintains 100's of layers and data for every department at the city. Here are some examples of critical business functions where GIS plays a major role.

- Address and street data provided to the Police and Lifeguard CAD/RMS systems
- Fire Department run books, Pre-Plan maps, and Special Maps
- Address verification for Building Permits
- Residential and Commercial Dock Permit fee yearly calculations
- Public Dredging Permit impact analysis
- Web map viewer used for research and customer service
- Data for the Drought Program
- Data and support for Online Permitting System
- Field crews using mobile devices to view GIS data and manage assets
- Public access to GIS data showing Police calls, Fire response, CIP projects, etc.

- Expert knowledge and advisement on the implementation of new systems including the ERP, CAD/RMS, Permitting, etc.

CURRENT SITUATION AND ORGANIZATION CONTEXT

GIS is centralized and managed under Information Technology as part of the Applications Group. Staff is comprised of two fulltime GIS Analyst and two fulltime GIS Technicians that are managed by the Applications Supervisor. The main software used is ESRI's suite of GIS products including SDE, ArcGIS for Server, and ArcGIS for Desktop, as well as a number of extensions and plugins.

SDE (Spatial Database Engine) resides in a SQL Server Database that serves as the main database for the majority of the crucial GIS base layers including Parcels, Centerline, Utilities, etc. SDE allows for the versioning of datasets and editing of layers by multiple users at the same time. This database is maintained and administered by GIS staff with backups being performed nightly.

GIS staff is responsible for maintaining the majority of spatial data for all departments including Police, Fire, MOD, Public Works, Community Development, etc. The only exception being the Planning Division which has a position that dedicates a portion of its time to maintaining the Land Use and Zoning layers as well as other related Planning projects.

Web based solutions have played a big role in communicating GIS data with city staff and the public. The main web map viewer staff uses has become a centralized research and visualization tool. Not only can the many GIS layers be viewed, but data from other systems can be retrieved such as Building Permits, Business Licenses, Water Billing, Tree Maintenance, etc. The viewer also provides links to numerous reports and scanned documents. On the public side, there is GIS internet homepage with links to a Map Catalog where .pdf maps can be downloaded, a Data Catalog where data can be downloaded in GIS or CAD format, and an Interactive Maps page where different themes of GIS data can be viewed in web based map viewers.

Out in the field, maintenance crews manage the Water Valve Exercise Program through the use of ruggedized laptops running the asset management software InfraMap. This software has been in place for a few years and has proven to be a valuable and efficient tool, allowing them to track their work and automate a lot of data entry process. This software also enables the supervisor the ability to track the progress of the program and reallocate resources accordingly. In 2015, field crews began using iPads to view the many utility layers available in the map viewer as a replacement for the paper map books they were previously using. Instead of carrying around several heavy map books that were outdated as soon as they were printed, they can view all of this information as well as additional GIS data, such as aerial imagery, on a light weight iPad with up to date information. Field staff performing Sidewalk Inspections have moved away from using a GPS unit, to an iPad with a map viewer allowing for data collection that has a much friendlier and more efficient user interface.

MISSION STATEMENT

The mission of Newport Beach GIS is to provide high-quality spatial and attribute data made available through the use of communicative technologies to increase efficiency, improve accuracy, and reduce redundancy to promote better decision making and data transparency throughout the City.

STRATEGIC INITIATIVES

- Expand the scope and range of GIS analytical and organizational capabilities.
- Standardize data in non-GIS databases to enable data integration and sharing of both spatial and non-spatial data with the GIS database and GIS applications.
- Ensure data is easily accessible to the public to ensure that the City is achieving its data transparency goals.
- Continue to promote GIS as the central repository for all spatial data.
- Continue to be a leader in innovative and new technologies in the GIS field.

GOALS AND OBJECTIVES

A key component of the GIS Strategic Plan process is to establish a unified vison, goals, and objectives. Goals and objectives create a mutual framework for stakeholders and drive subsequent decision-making throughout the life of the plan. The following list represents an assessment of goals and objectives that will help continue to expand the city's GIS and deliver a high end, integrated product.

- Street Address Standards Across Enterprise Systems
- GIS Consideration and Input in City RFP's and Contracts
- Testing Environment for Software Updates and New Features
- Reorganization of the GIS data and directory structure
- Documentation of Procedures and Workflows
- Improve Inter-Departmental Communication as Changes in Data Occur
- Integration of Financial Data with GIS
- Training for City Staff on New Tools and Capabilities
- Outreach and Education of GIS Technology and Integration
- Explore New Ways to Engage the Public with GIS Data
- GIS Staff Classifications

Street Address Standards Across Enterprise Systems

One of the biggest challenges when working with data from other systems is how to get that data to join with the GIS. Typically, an address is the common denominator that is used to integrate the two systems. Many of these systems have a different address standard for entering an address if they have any standard at all. This results in additional work the can require a significant amount of time to get the databases to join together. For current database systems and any new database systems it would be beneficial if the Address Standards set by GIS were adopted. This would not only create a direct link between the GIS database and these other systems but between the non-GIS systems as well.

Recommendation: Form a Street Address Committee, comprised of representatives from different departments who enter and maintain street addresses, to develop a set of address standards to be adopted across the organization.

GIS Consideration and Input in City RFP's and Contracts

Many of the RFP's and contracts in recent years have a GIS component and/or asset management piece to them. The end result being staff would like to see this data loaded into the web map viewer and in some instances maintained by GIS staff. GIS Governance is needed to make sure that GIS staff is included in the process of reviewing and recommending requirements for RFP's and contracts when data is being created that the city's GIS can utilize. Considerations include

- Who will maintain the data?
- Accuracy of the data
- Attribute information being collected
- Format of the data
- Where will the data be stored?

Recommendation: Work with the Purchasing Agent to ensure that GIS/IT is copied on the drafting of RFP projects that involve asset management and/or GIS related data.

Testing Environment for Software Updates and New Features

All upgrades are currently done to the live GIS database and web server. This is not best practice and puts the GIS production servers at risk every time an update is applied. A test environment would ensure that any changes are working correctly and have been thoroughly tested before being applied to the production servers.

Recommendation: Coordinate with IT Operations to configure a test environment.

Reorganization of the GIS Data and Directory Structure

Layers and data (not stored in SDE) and all GIS projects are stored on a file server. The file structure is loosely organized by department accompanied by multiple folders pertaining to other data and projects. Reorganizing the existing data structure may not be practical with over 15 years of data and projects representing 1000's of files, but moving forward guidelines and standards need to be put in place to better organize future data and projects.

Recommendation: Meet with GIS Staff and diagram out a new data storage structure and set standards for naming conventions and metadata.

Documentation of Procedures and Workflows

A lot of GIS data creation and maintenance has been automated over the last few years. There is very little documentation regarding these automated processes which could prove detrimental if problems were to arise. It is recommended that the GIS Knowledge Base be reorganized and updated so that all GIS and IT staff can have a better understanding of the system in place and be able to troubleshoot as needed.

Recommendation: Select a solution for creating a knowledge base library and begin documenting the procedures and workflows.

Improve Inter-Departmental Communication as Changes in Data Occur

Many projects require the creation and/or cleaning up of data, whether it's for a RFP or other need. Once the project is completed, many times these data sets aren't maintained because of a lack of communication and workflows between GIS and the department or individual that made the request.

Recommendation: As part of any project where data is being created and/or cleaned up a workflow needs to be put in place with the request so that GIS can make sure the data is being kept updated.

Integration of Financial Data with GIS

Another area GIS is being leveraged in is with financial information. Being able to analyze land value, tax revenue, revenue from permitting fees, etc. can play a critical role in understanding how and where the city is generating money.

Recommendation: Look at the different revenue sources available in the different data systems around the city and see how they can be integrated with GIS. Discuss with staff what type of analysis and data they'd like to see on the map viewer and strategize the best way to communicate that data.

Training for City Staff on New Tools and Capabilities

Technology continues to evolve and improve at a rapid pace, particularly in the field of GIS. Regularly scheduled staff trainings will be necessary to ensure the application is being utilized effectively, and the trainings will serve as a platform to introduce new tools, layers, and features.

Recommendation: Setup quarterly training sessions, lunch and learns, and training sessions during department staff meetings.

Outreach and Education of GIS Technology and Integration

Meet with management and staff (and community members) to educate them on how GIS can better aide them in their day to day work as well as how it can be integrated with other systems and data sets. The more data that can be consumed by the GIS the more people can use the data and maximize its potential.

Recommendation: Arrange biannual department meetings with the main users of GIS as well as reaching out to community members for their input. Create weekly/monthly communication vehicle to alert users of new features and tips. (Blog, email opt in distribution list, Instagram, videos, etc.)

Explore New Ways to Engage the Public with GIS Data

GIS can be used to answer lots of questions and communicate a great deal of information to the public. Through the use of Map Viewers, the Map Catalog, and the Data Download site the public can stay engaged with current projects, police calls, etc. This has proved to be an effective tool but there is always room to improve how the data is communicated and if other data sets can be made available.

Recommendation: Redesign the open portal/website mapping structure to make it easier to find. Look at other datasets to display on the Map Viewers that the public will find beneficial.

GIS Staffing Classifications

The role of GIS at the city and the responsibilities and skillset of GIS staff has evolved over the years. It would be beneficial to look at how role of GIS has grown within the organization and how the work and technical skills of the GIS staff has grown as well. It would also be important to look at structuring more of a career path and room for growth with the GIS group.

Recommendation: Work with HR to conduct a GIS position classification study to determine correct classification of positions. Look into possibility of having a Senior position be part of the staffing set up to provide a better succession layout.