Hart InterCivic Geo-content

CASE STUDY

Assessor's Office with a Vision

The Boulder County, Colorado Assessor's Office faced a complex task migrating their sizeable application and data set to support their new architecture.

VISION

The Tax Assessor in Boulder County, Colorado comes from a long line of visionaries. Back in the days of the green computer screen with a command line prompt, then-Assessor Bill Goodyear foresaw that geographic information system (GIS) technology would streamline the process of assessing property values. It would enable the Assessor's Office to provide better service faster to Boulder County's taxpayers. It's true; the Office has maintained the same staffing level since the '70's, and citizens would agree that services have expanded. Boulder is a fast-growth county, as well, with a two-year appraisal cycle.

Building on Goodyear's far-sighted vision, the Boulder County Assessor's Office has consistently pursued innovative approaches to meeting its responsibilities to taxpayers. It was one of the first county offices in the nation to adopt GIS as a key element in property value assessment.

By using GIS technology in the appraisal process, the Assessor's Office could more easily allow for the effect location has on value. Appraisers know that the houses within a single subdivision or neighborhood, all built at approximately the same time by the same builder, are likely to have similar values. However, a house that is adjacent to a golf course may be valued differently from an equivalent house that faces a major street. Location and surrounding properties play a significant part in the value of a house or land.

COST OF EARLY ADOPTION

The Boulder County Assessor's Office was careful to select its GIS toolset from an industry-leading vendor, Environmental Systems Research Institute (ESRI). Over several years, the Assessor's Office developed a large inventory of custom applications and tools. However, early adoption of GIS technology bore a cost. When revolutionary changes occurred in the structure and capabilities of ESRI's software, the Assessor's Office faced a complex task migrating their sizeable application and data set to support the new architecture.

GIS integration has enabled the Assessor's Office to provide better service faster to Boulder County's taxpayers.

Previous to this major migration (moving to ESRI's next-generation ArcSDE™ and ArcMap™ software), the County had written its own tools and applications needed to leverage the ESRI environment. Cindy Domenico, Boulder County's Assessor at that time, learned through experience that developing "home-grown" software utilities was time-consuming and expensive. Such development efforts could also dilute staff members' focus on their primary mission—providing taxpayers with accurate, equitable, up-to-date assessments. Domenico knew that as much as possible, she wanted to purchase off-the-shelf ESRI-enhancing tools, not develop them.

BOULDER COUNTY TIMELINE

1980s
Edited parcels on paper

1985
Introduced first GIS, ArcInfo from ESRI

Late 1980's to early 1990s
Converted paper records to digital format

Early 1990's to 2005
Edited parcels with ArcInfo Workstation

2004 to 2005
Prepared for conversion to new ESRI environment

2006 to present
Work in geo-database environment, using new ESRI and ParcelSync tools

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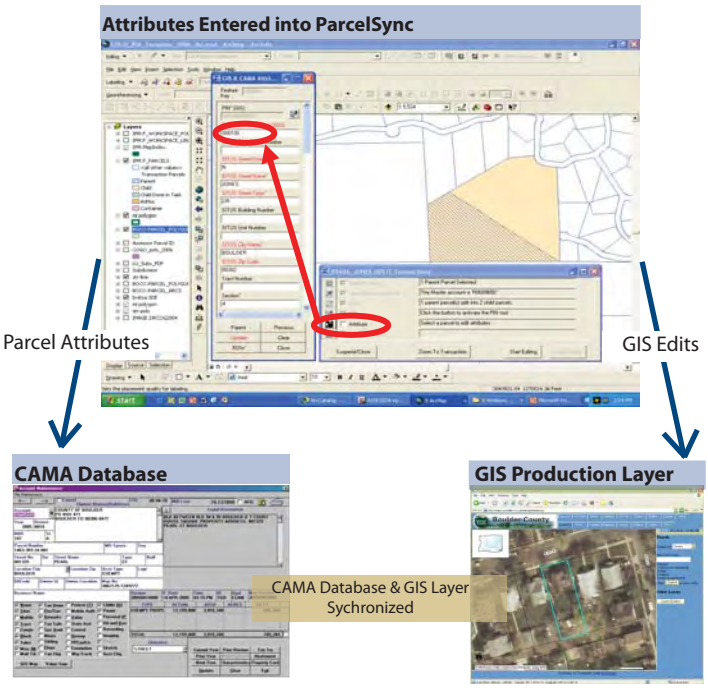
"It's brought us into the modern world of GIS. Our work isn't so isolated. It's broadened our world, and it's fun! We're just scratching the surface."

Rachel Parrinello , *GIS Technician with the Boulder County Assessor's Office*

BEYOND PARCEL EDITING

One tool the Assessor's Office discovered during preparations for the major migration was being developed for Wake County, North Carolina. This tool was Integrated Parcel Maintenance (IPM), now called ParcelSync™. ParcelSync's creator, Farragut Systems, was a longtime contractor for Boulder County. Watching the process with Wake County, Boulder County believed that Farragut could tailor the tool to fit their business processes and existing software suite. (Farragut Systems was purchased by Hart InterCivic in June 2007.)

ParcelSync is a GIS software product built on top of ESRI-based technology (more precisely, it's an extension to ESRI's ArcInfo ™) that allows a GIS user to simultaneously edit both GIS and computer-aided mass appraisal (CAMA) data and to update the two databases in tandem. Having searched for nearly a year for such a tool, Domenico's staff determined that ParcelSync provided functionality unavailable from other tools on the market. It was also open and versatile.



REAL-TIME SYCHRONICITY

Implemented in February 2006, ParcelSync now serves as the primary parcel editing environment for Boulder County GIS staff. Beyond parcel editing, however, ParcelSync solves two thorny problems for the County—synchronizing GIS and appraisal data in real time, and reducing processing backlogs that occur at certain times of the year.

GETTING IN SYNC

By adopting GIS technology, the Assessor's Office became responsible for two separate databases—the GIS database and the property appraisal database. The GIS data is stored in an ESRI Geodatabase, while the assessor database is managed in a CAMA system, which records property attributes and calculates property values. Before ParcelSync was implemented, the two data sets were rarely synchronized. While the Assessor's Office rigorously maintained its primary data in the CAMA database, the GIS data often lagged behind until staff found time to update it. Out-of-sync data caused problems, because Assessor's Office constituents, including taxpayers and other County departments, rely on the maps displayed on the Office's Web site.

Implemented in February 2006, ParcelSync has eliminated the problem of out-of-date maps for the Boulder County Assessor's Office. By allowing users to update GIS and CAMA data simultaneously, it reduces the effort required to manage the databases, improves the timeliness of database updates, and ensures that the databases stay synchronized.

As stated by Cynthia Braddock, Boulder County's GIS Deputy Assessor, "We're much more current on data, so we're more confident about sharing data. We've gained confidence in using data because a lot of pieces are coming together – mapping is one of them." This up-to-date mapping data was recently added to the Assessor's newly designed Notice of Valuation, which contributed to a noticeable reduction in costly appraisal appeals.

By streamlining the data entry process, ParcelSync increases the accuracy of assessment data.

REDUCING BACKLOGS

Compliance with certain Colorado statutes can cause CAMA data backlogs. The statutes require that data in the CAMA system remain static during specified periods, to allow for special assessment events. Braddock explains, "We have a 'start/stop' calendar; we have to place a hold on work at four points during the year."

The CAMA database cannot be updated during the month of May, the month during which taxpayers can protest their property tax bills. The database must also remain static during two days in August set aside for assigning preliminary certification of value for taxing authorities such as the fire department, city, or water district. No updates are permitted during early December, when the final certification of value is assigned. During the last two weeks of December, the Assessor's Office transmits tax rolls to the Treasurer and cannot update CAMA data.

These statutorily required "hands-off" periods have historically resulted in parcels stacking up, awaiting data entry into the CAMA system. According to Braddock, in the past, it has taken as much as six months to catch up. "Now," Braddock says, "it takes two weeks, at the most."

ParcelSync allows Assessor's Office staff to process changes and place them on hold until the "stop" period has passed. The software provides a workflow that enables staff members to continue working, only activating changes when it is legal to do so. GIS and CAMA databases remain static but can be quickly updated at the appropriate time. Placing records on hold took some getting used to. As Braddock explains, "We're learning to trust the software—and the processes—for pending records."

CATALYST FOR CHANGE

The GIS function in Boulder County is distributed; the Assessor's and Land Use departments share GIS responsibilities, with coordination from the IT department. Because of its close ties with the Assessor's CAMA system, ParcelSync was the catalyst for the Assessor's Office taking over all of the GIS parcel editing. This change placed parcel-related decisions (such as who is the parcel's owner and what is its usage) squarely in the Assessor's purview, a shift in accountability that the Assessor staff welcome. The change also freed the Land Use department to manage data creation tasks such as mapping boundaries for fire districts and other taxation authorities.

HUGE TIME SAVINGS

Rachel Parrinello is a GIS Technician with the Boulder County Assessor's Office. She has seen substantial changes over the five-and-a-half years she has worked in the Office. According to Parrinello, "It's not unfair to say the previous way was twice as time-consuming." The new environment, with its combination of new ESRI GIS tools and the features that ParcelSync supplies, provides huge time savings.

ParcelSync saves staff time by reducing data entry keystrokes. It automates the assignment of parcel identification numbers (PINs) by supplying the section, township, and range. The operator only needs to add a unique identifier.

ParcelSync also "floods" attributes to the Assessor's CAMA database. Values entered in a master account are used to copy applicable attributes (such as ownership, tax area, section township range, and mailing address) to all new "children accounts"—accounts created from the master account.

BOULDER COUNTY BENEFITS

- Increased accuracy & timeliness of property value assessments
- Greater constituent confidence in accuracy of mapped data
- Reduction in costly appraisal appeals
- Expanded services to taxpayers while maintaining 1970's staffing level
- Diminished database backlogs following state-mandated "no update" periods
- Faster, more accurate data entry with reduced keystrokes

"The product is incredibly well supported. There are lots of places the software can take us. Just think about what other data can be collected. GIS is a powerful technology, and [ParcelSync] makes it usable."
Cynthia Braddock, *Boulder County's GIS Deputy Assessor*

Another time-consuming task the new environment has eliminated is manual annotation of the maps. Previously, GIS staff spent literally half their time labeling maps. With today's tools, labeling data can be pulled from tables. It's dynamic; when the data in the table is updated, the labels on the map are updated. Operators can make a good-looking map quickly with these tools.

Reducing keystrokes not only saves time; it cuts down on errors. As Supervisor Cynthia Braddock says, "The minute a person touches data, mistakes happen." By streamlining the data entry process, ParcelSync increases the accuracy of assessment data.

UNEXPECTED BENEFITS

According to Braddock, the efficiency gains allow the GIS department time to do higher-level mapping. For example, the GIS staff can now provide requested details to appraisers. Tasks are more diversified, and staff members have more opportunities to take on new responsibilities. This contributes to staff retention.

When asked how ParcelSync has affected her daily work life, Rachel Parrinello stated, "It's brought us into the modern world of GIS. We can bring in aerial photos; we can use surveyors' metes and bounds [the coordinate geometry used in surveying]. We can use all the [ESRI] ArcGIS tools. Our work isn't so isolated. It's broadened our world, and it's fun! We're just scratching the surface."

VISION FOR THE FUTURE

The Assessor's Office envisions a dramatic increase in the amount and usefulness of parcel-based data throughout Boulder County. The Office foresees more integration and collaboration among the County's departments and the cities that make up the County. This information sharing will improve efficiency for all these offices and lead to enhanced services for residents.

The first goal for the Assessor's Office is to add to the data points they have available to accomplish their primary directive—producing accurate property assessments. Currently, the Office maintains one layer of data in the GIS system, the CAMA layer. The CAMA layer contains appraisal information that relates to property value. The Office plans to eventually add data layers for the many additional factors that affect this value. These factors include soil type, mineral rights, agricultural classifications, mountain property attributes (such as access, which is affected by slope and aspect), and more. Integrating this additional information into the existing system will enable the Assessor to further hone the accuracy of valuations.

The Assessor's Office also plans to enhance its ESRI-based GIS toolset by adding AddressOne™, a product that provides a central repositiory for county addressing and reconciles addressing discrepancies. In addition, AddressOne™ also provides additional ESRI tools that allow for the creation and management of the relationship of addresses to geography. Like ParcelSync, AddressOne is part of Hart InterCivic's Vantage™ product suite, a set of tools that allow customers to integrate complex, redundant practices. Accurate addresses, combined with the addition of address point data and street centerline files, will form a precise basis for cross-referencing parcel data with data sources like water billing. Other jurisdictions have discovered previously untaxed parcels in this manner.

There is a movement afoot in Boulder County to build a shared, multi-layer ESRI Geodatabase that will be invaluable to all stakeholders. The Assessor's Office would like to see a process in which staff could load a data set and give it to another office to modify and return it. For example, the Health Department could update septic system information. The database would ultimately include mapped layers for building permits, mosquito abatement, fire protection, oblique aerial photography, and other data.

One force driving the concept of a comprehensive, countywide Geodatabase is the knowledge that multiple departments are maintaining the same data. By coordinating data maintenance, these departments would eliminate duplicate effort. More importantly, a comprehensive Geodatabase would readily provide maps that display needed information. For example, firefighters could have quick access to the map they need to navigate up a smoke-obscured mountainside and locate all structures in the path of a wildfire.