City Address Verification
The City of Altamonte Springs
Information Services

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City of Altamonte Springs
Background Information

- 10 miles north of Orlando
- 9.6 Square Miles
- Population: 41,496
- 425 City Employees
- GIS under Information Services
- 3 GIS Staff
Address Verification Overview

- The Problem
- Project design
- Verification Phases
  - Office
  - Field
- Web maps
  - Flex
  - ArcGIS Online
- Field verification
  - ArcGIS App
- Status
The Problem

- City is implementing new Enterprise Resource Planning (ERP) software
- GIS database key component
- Addresses are critical
- Need to ensure Address layer is clean prior to loading into the new ERP
ERP

Enterprise Resource Planning System

- A set of business software tools designed to facilitate the flow of information between all departments or functions within a business.
- The ERP integrates information seamlessly throughout the organization.
- One interface to access multiple processes
  - Utility Billing
  - Accounting
  - Occupational Licensing
  - Code Enforcement
  - Work Orders
City Addresses – Data Sources

1. GIS Address Layer
   ◦ polygon-based, poorly maintained

2. City Address fields in copy of County Parcel layer

3. Accela Permitting Application

4. Sungard HTE Database
   ◦ Highest level of confidence in quality of addresses (Customers get their bills)
Addresses

Had already considered replacing City Address layer with County Situs layer
  - Polygon based
  - Poorly maintained

Address maintenance workflow was complicated:
  - Address verification requests from County E911
  - City would research and edit our City Address layer, then notify County of correct address
  - County would then update Situs and E911
Initial Assumptions & Approach

- Assumptions:
  - City’s Sungard HTE database is the City’s most accurate source of address information
    - But lacks spatial coordinates
  - County Situs points are within building footprint
  - We could create a custom Address Locator for Situs, including apartment numbers

- Approach:
  - Match HTE addresses to Situs points
    - Use Join for exact match HTE:Situs
    - Geocode the rest that fail to Join
      - Geocode to Situs first
      - Geocode any remaining with Esri World Geocoding service
Matching City & County Addresses

Lessons Learned

- **Esri Address Locator Styles**
  - Not good at finding Unit numbers (Apartments or Suites)

- There are unsupported address locators out there, but results were disappointing
  - Many false matches (thousands)

- Decided to rely exclusively on JOIN to find exact matches
  - Avoid Geocoding altogether
New Approach – Break problem into sections:
1. Resolve all Street Name discrepancies first
2. Resolve street Address Numbers next
3. Resolve Apartment/Suite Unit Numbers last
Street Names

- Used Statistics tool
  - Create list of unique street names in HTE
  - Create list of unique street names in Situs
- Compared HTE and Situs Street Names
  - JOIN HTE:Situs (then reverse selection)
  - Records that fail to Join are HTE street names that do not exist in Situs

- Sent list of 58 unmatched street names to City address experts
  - City researched each name, going to Plats if necessary
  - Corrected 42 Street Names in Sungard HTE (mostly suffixes)
- Requested the County change 11 street names in Situs

- Improved exact match to Situs by about 1,000 addresses
Address and Apartment Numbers

29,027 City HTE Address records
– 23,954 (83%) Exist in Situs (Exact Match)
= 5,073 (17%) Not Found

Of these…

3,451 (68%) Have Unit (Apt/Suite) numbers
1,622 (32%) Do not have Unit numbers
Addresses at a Glance

- **Grey:** City Sungard/HTE Addresses in Situs (23,954 exact matches)
- **Red:** Apartment/Suite Number Issues (3,451)
- **Yellow:** Address Number Issues (1,622)
Next Steps

Analyze lists and look for patterns:
- Address number issues
- Unit (Apt/Suite) number issues

Work out Address Verification Workflow with County
- County Fire Department field verification
- City QA / Approval
Verification Phases

- Phase 1 – Verify as many addresses as possible in the Office (317)
  - Google Streetview
  - Pictometry
  - Seminole County Property Appraiser lookup
  - USPS Zip code Verify
  - City Address Experts

- Phase 2 – Field verify remaining addresses (4,094)
Tools

- ArcGIS Viewer for Flex
- ArcGIS Online Web Map
- ArcGIS App
- iPad
Web Maps

Services published with ArcGIS Server and viewed using:

- Flex Viewer
- ArcGIS Online
Flex Map

- Allowed field workers to plan where to go next
- Allowed field workers to see what they have done
- Allowed supervisors to stay up to date on project
- Staff could monitor progress
ArcGIS Online & ArcGIS App
Pop-up

<table>
<thead>
<tr>
<th>Field</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>QA Addresses:</td>
<td>USA.PointAddress</td>
</tr>
<tr>
<td>StreetNumber</td>
<td>990</td>
</tr>
<tr>
<td>StreetDirectionCode</td>
<td>N</td>
</tr>
<tr>
<td>StreetName</td>
<td>STATE ROAD 434</td>
</tr>
<tr>
<td>StreetSuffix</td>
<td></td>
</tr>
<tr>
<td>ExtendedAddressText</td>
<td></td>
</tr>
<tr>
<td>StreetApartmentNumber</td>
<td>1112</td>
</tr>
<tr>
<td>City</td>
<td>ALTMONTE SPRINGS</td>
</tr>
<tr>
<td>Address_Status</td>
<td>QA Done</td>
</tr>
<tr>
<td>Point Moved</td>
<td>Placed on building</td>
</tr>
<tr>
<td>Verification Method</td>
<td>Field verified</td>
</tr>
</tbody>
</table>
Edit
Editable Attributes
Domains

**Address Status**
- Could Not Find
- QA Done
- Further Research Needed
- Field Verify

**Verification Method**
- Google Streetview
- Other
- In Office
- Field verified

**Point Moved**
- Snapped point to situs
- Placed on building
- Other
Photos
Photos for Unusual Addresses
Dissolved Parcels
Field Verification Team

- Two City employees to verify the data
  - One employee driving another collecting data (ensured safe driving practices)

- Becoming very familiar with City address scenarios and issues
Address Issues

- Complexes create own addressing system
- Addresses not visible on exterior building
- Suites either vacant or combined two suites into one leaving a suite address not in use
- Challenge: Altamonte Mall comprised of 305 addresses
Altamonte Mall
Altamonte Mall
Project Stats

- 2 City employees devoted to verification
- 5,073 Addresses need verification
  - About 200 addresses/day
  - A little over a month to complete
- 6% Verified in office
- 82% Need field verification
- 12% Could not find
  - Address staff ran through these and changed in HTE
Seminole County Addressing

- We sent the county about 2900 changes.
  - Addresses they didn’t have
  - Changes to their addresses
- They went through them with their processes
- Communication is key
  - Field Photos
  - Field checks
  - Site plans
  - Ask PA to re-arrange parcels
Both Parties Completed

- We ran our process
- Compared our HTE addresses to Situs with exact match.
- Improved our matches by about 2,800 addresses.
- Determined we’d need to send more changes to the county. Which was expected.
- Decided to build our address layer first.
  - Then could send changes to county.
  - Don’t have to wait on them
Building Address Layer

- Used County’s Situs as base
- Added addresses they didn’t want
  - Orange County Addresses
  - Building Addresses
- Table of 2859 addresses that did not match situs
  - Added those we could based off of previous field work.
  - Narrowed down to a list of about 900 to send to address staff to require yes/no answer on.
Finish Line Ahead

- 100% City Address Database QA
- Resolve the spreadsheet of 900 addresses that are left
- Send County round 2 of addresses they need to add.
- Load completed address layer into ERP system
Summary

Original Need:
- Clean Address layer for new ERP

Additional Benefits
- Validated City Addresses
  - Street Names
  - Address Numbers
  - Apartment / Suite Numbers
- Improved County Situs layer
- Improved Address Verification workflow
Acknowledgements

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Questions?

Thank you!

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