City of Portland
Master Address Repository
Intro and Initial Data Cleanup Efforts
What is the Master Address Repository?

**Master Address Repository**

Addresses

Buildings

Tax Lots
Why did we build the Master Address Repository?

- The City of Portland recognized the need of a single source of record for addressing
- Address points relate to tax lots and buildings, with changes over time
- The Bureau of Development Services adds new addresses into the MAR
- Master address repository will be slowly incorporated into other bureaus
- Sophisticated metrics grade and flag data discrepancies
Where did the data come from?

Address points:
• County tax lots centroid @ 225k
• USPS – apartments and multi-dwelling @ 100k
• City of Portland’s permitting system @ 13k

Building Footprints:
• Derivative of LiDAR data

Tax lot polygon:
• Counties
Address Point Accuracy Metrics

• Combination of quantify and qualify to identify issues with address point location -- metric framework allows for more sources
  • Is address on associated tax lot/building?
  • Is the address a valid mailing address?
  • How far away is the address point from where Google Maps says it is?
  • Is the address near where the City of Portland’s estimated location based on street centerline?
  • Has there ever been permitting activity associated with this address?

• Address accuracy goal:
  • Residential – address point should be on associated dwelling unit building
  • Commercial – address point should be located at door or on tenant space
How Do Address Points Relate to County Tax Lots?

**Scoring Criteria**

- Is the address point associated within the same tax lot it’s associated with in the MAR?
  - 3 POINTS
- If there is not taxlot, is the address point in a hydro body?
  - 3 POINTS
- If the county has a site address let’s geocode it and see if it lands relative the tax lot boundary.

We can connect the dots from the associated building centroid to the address point. That’s line should not cross the tax lot boundary.
How do Address Points Relate to PDX Building Footprints

Scoring Criteria

- Is the address point associated within the same building it’s associated with in the MAR? Garages are ignored. **1 POINT**
How do Address Points Relate to PDX Street Centerline

The city maintains a detailed centerline dataset that is used as the basis for new addresses.

This dataset is updated frequently by CGIS and a centerline geocoder is built off of this dataset. We can programmatically query into the geocoder and get an “estimated location” for each address string.

**Scoring Criteria**

If we “connect the dots” from the estimated location to our address point, that resulting line should not cross a street. 2 points
How do Address Points Relate to External Resource: Smarty Streets

Smarty Streets is a web based address verification tool that checks to see if addresses are deliverable. It also gives us an estimated location based on tiger centerline data.

Key Benefits
• Only metric for valid mailing
• Good for multi-dwelling
• Bonus attribute data

Scoring Criteria
Is the address a valid mailing address with smarty streets? **1 point**

Is the address location on the same side of the street as MAR address location? **1 point**
How do Address Points Relate to External Resource: Google Maps

Google maps API has a free geocoding service that allows you to search for an address – if found it returns location and other details.

Key Limitations

• rooftop and range interpolated matches better
• 2500 queries a day (for free service)
• Not good for multi-dwellings

Scoring Criteria

The google maps location should be on the same side of the street as our address point. 1 point
The google maps location should be within the same tax lot as our address point. 1 point
Bulk Updates

MAR data lives on SQL server 2008 database. The shape field is of type <geometry> this means that we can edit the shape field using SQL update statements.

The trick is to create business rules that we can script into SQL statements, identifying error patterns, isolating those records and updating shapes to correct the errors.

- No related tax lot or building, but it’s on tax lot or building and the address does not violate the centerline rule. We can associate the address point with spatially coincident tax lot and building.
- Only one building on tax lot – address point should be on that building
- Only one house and one garage on tax lot – address point should be on that building
- Addresses should be unique - delete duplicates
# Address Accuracy Scoring Recap

<table>
<thead>
<tr>
<th>Metric</th>
<th>Points Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Address Point within correct Tax Lot</td>
<td>3</td>
</tr>
<tr>
<td>Address Point within Building Footprint</td>
<td>1</td>
</tr>
<tr>
<td>Address Point on same side of street as estimated centerline location</td>
<td>2</td>
</tr>
<tr>
<td>Address Point in same tax lot as estimated google maps location</td>
<td>1 *not all google data processed</td>
</tr>
<tr>
<td>Address description valid mailing address (according to smarty streets)</td>
<td>1</td>
</tr>
<tr>
<td>Address Point on same side of street as estimated Smarty Streets Location</td>
<td>1</td>
</tr>
</tbody>
</table>

Completely Inaccurate Address – 0 points  
1st round review minimum passing score – 6 points  
Perfect Score – 10 points  

*not all google data processed – we are limited to processing 2500 points per day.
Manual Corrections

• Correction Workflows

  • Level one editors – first pass review if the edit is straightforward they fix if the edit takes more than a couple minutes to resolve or advanced research they can escalate to level 2

  • Level two editors- address editing subject matter expert, have knowledge of permitting system. Can request centerline edit or field review. Use an ArcMap DME to make edits.

  • Centerline edit needed – in some cases our centerline network may need updating. The address cleanup effort should force centerline errors to surface.

  • Field review needed – walk/drive/bike around to a location and figure our what’s going on.

• Re-run metrics

  • After any address point is moved, metrics are re-run
Simple Web Editing App
Feedback Loop
Process for users to suggest address reviews

Portland Maps user internal/external wants address reviewed

Review request gets queued at the top of list for Tier 2 review

User is notified to review details

Address is reviewed and update is made if needed
Questions?

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