Digital Globe – Parcel Plot Building Challenge

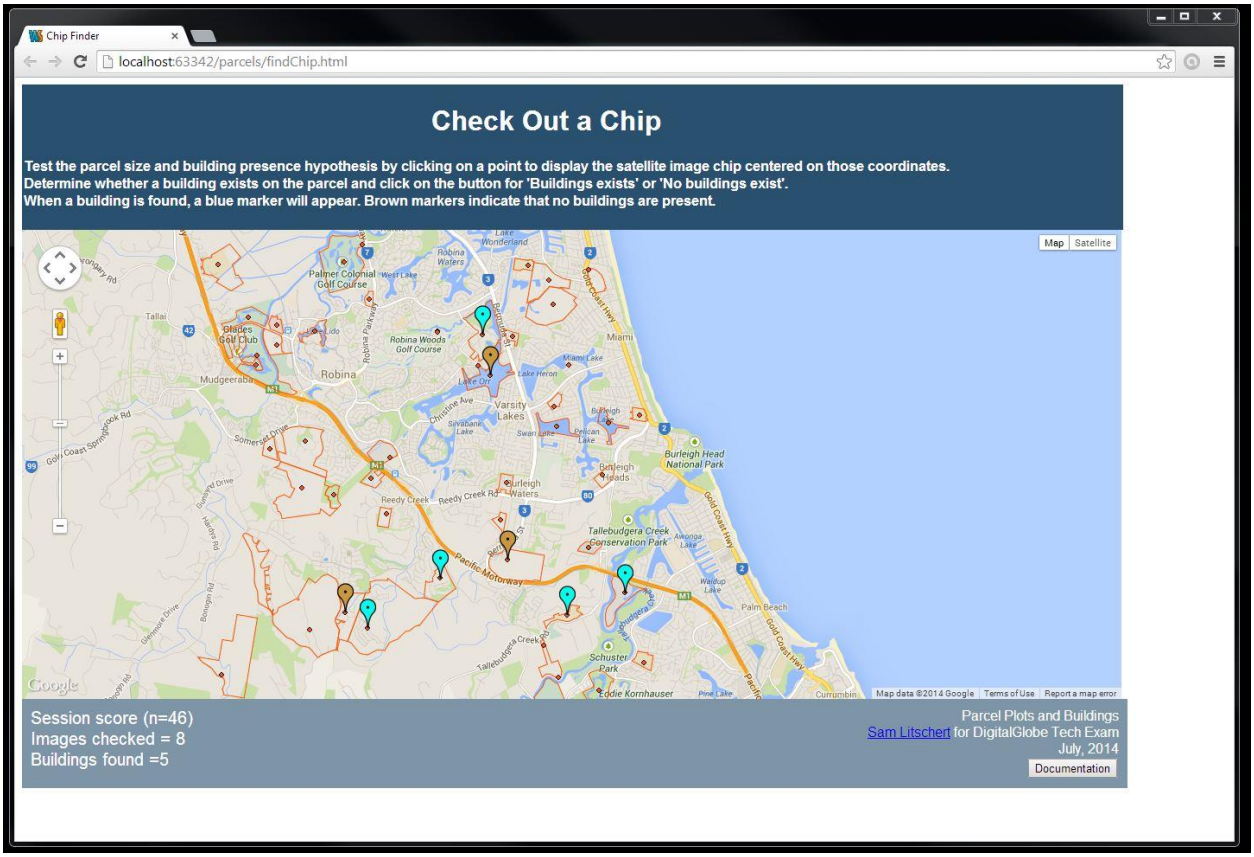
We know that in fact not every parcel contains a building and we need to remove these "false alarms" before delivering to the customer. Our hypothesis is that the largest 10% of parcels (by area) are likely to not have buildings – but we want to confirm this by looking at a current DigitalGlobe satellite image.

The challenge involved 3 main steps:

1) *Get Centroids of Largest Parcels*
   - Using ArcGIS, I projected the Gold_Coast_City parcel layer to WGS 1984 transverse Mercator to match the parcel centroids and Google maps projection
   - I sorted the parcel layer by area; used the area of the largest parcel to calculate the top 10% of area, selected these largest parcels (n=46), and exported to a new shapefile.
   - Used a spatial join to get the parcel centroids for the largest parcels (n=46); exported points to a new shapefile.
   - Converted the parcels and centroids to kml files. The data are posted on dropbox.

2) *Retrieve a Satellite Image Chip for each Centroid and*
3) *Display the Results for Validation*
   - I built a webpage to test the hypothesis; it displays the Gold Coast City parcels and centroids in Google Maps.
   - The user is given simple instructions to click on a point or parcel to display the appropriate satellite image chip.
   - When a point/parcel is clicked, the parcel and centroid data are also displayed in a table.
   - If the map is clicked outside of a point or parcel, an alert reminds the user to click on a valid centroid point.
   - The interface zooms into the point and parcel and the chip is displayed alongside.
   - The user can chose to select 'Buildings exist', 'No buildings exist', or simply close the chip window if the answer is uncertain.
   - Note that if the user clicks on a large parcel, the chip may not show the entire parcel. With the chip close button, they can examine another portion of the parcel before deciding whether a building exists or not on that parcel.
   - A session score of the number of images checked and buildings found is maintained.
   - When the case is determined for whether a building is present or not, a new marker is assigned to the parcel and colored blue if a building is present or brown if there is no building on the parcel.

See the following figure for a screen grab of the web page with markers showing the presence or absence of buildings.



Discussion points

If the image chip had been georeferenced, it might have been possible to overlay it onto the google map, with parcel data to more accurately identify parcels and buildings.

If this was a long term project, it would be useful to have the user log in and store session scores, chip ids, and point data in their account.

Who are the customers for this and what is their skill level? Knowing whether it was for Digital Globe technicians/scientists, partners, or customers would have made a difference to the interface.

The hypothesis might be more successful in an area less developed than Gold Coast City. Alternatively, we could have used GIS data, if available, to determine and exclude large parcels with institutions such as universities and golf clubs.