Preparing a mission (be it operational or foundational) requires up-to-date knowledge of features in the area of interest (AOI). In dynamic urban environments, the pace of change can exceed the pace of map creation. Radiant Solutions’ change to Urban Change (urchn) application can assist in answering the question of “where do I need to map next” to collect additional ground data and start answering the complex questions the GEOINT community face each day.

Features & Benefits

urchn draws from Persistent Change Monitoring (PCM) data and OpenStreetMap (OSM) editing statistics to provide the most complete view of urban change available.

- Radiant Solutions’ PCM data. This highly curated product identifies areas of persistent change within a time series of satellite images, tagging change polygons with the date of first detected persistent change.
- OSM changeset data from OSMesa to track OSM edits in near-real time.
- DigitalGlobe’s Plus Metro basemap. This imagery basemap is updated annually to provide a current high resolution picture of thousands of major urban areas.

The urchn dashboard above shows areas of detected change. The grid on the left displays aggregate change from spectral data, while the detail map to the right shows specific areas of multi-spectral change and mapping activity with supporting statistics.

Project Overview

Radiant Solutions has collaborated with DigitalGlobe, Development Seed, and Azavea to create a tool that combines multi-spectral change data, map currency statistics, and DigitalGlobe imagery to better understand the current state of urban development and how well it is mapped. This capability will answer the question “where should I map” for those responsible for maintaining feature currency. Persistent Change Monitoring data coupled with OpenStreetMap editing statistics will highlight places that have changed and have not yet updated on the map.
Above urchn is highlighting a region where multispectral change has been detected in an area where two new buildings have been created, but the OSM editing behavior has not caught up.

Technical Approach

Urchn provides urban change statistics in two primary views: an asset view and a map view. In the asset view, users can compare urban change across plus metro areas with aggregate PCM and OSM editing statistics. In the map view, users can browse PCM and OSM editing heat maps, then drill into more specific statistical relationships to determine if PCM data correlates with OSM editing behavior. In cases where PCM change does not correlate with updates to the map, users will have a better idea where the map needs to be updated. Further users might find cases where map editing behavior is occurring in areas where no spectral change has been detected. This might indicate possible areas where either the image was out of date, or perhaps more likely is detecting omission errors where the map hasn’t been updated in years.

Above the attributes for the PCM change detection polygon are displayed. The user can view the date of detection and the area of the polygon.

Ready to sample Urchn’s capabilities in your own AOI? Contact us at capabilities@radiantsolutions.com to get started.

Above urchn is highlighting a region where multispectral change has been detected a surface type material change for a bridge (concrete to asphalt) where the OSM attribution has not caught up.