

REQUEST FOR INFORMATION: The United States Census Bureau is conducting market research to identify available sources, processes, software, and related techniques for detecting change in structures (housing units, other residences, businesses, and other buildings, addresses (postal and location), and street centerlines.

Background

The Geography Division (GEO) updates and maintains address data and street centerlines to support the correct allocation of population and housing for censuses and surveys. Boundaries, roads, addresses, structure points, and selected other features are maintained in the Master Address File/Topologically Integrated Geographic Encoding and Referencing (MAF/TIGER) database. The GEO collects address and geographic data from tribal, state, and local governments through a Geographic Support System Initiative (GSS-I) Partnership Program and through other geographic programs, such as the yearly Boundary and Annexation Survey. When MAF/TIGER information is updated with road, address and structure point data additions, deletions and changes, the boundary network should also be reviewed and, if necessary, updated to preserve geographic relationships.

In preparation for the 2020 Census, it is necessary to track where change on the landscape is occurring to ensure a complete and accurate census. In the past, this was accomplished through a field operation called address canvassing where field listers walked every street in the nation to verify and, where necessary, update the address list. This decade, to both reduce cost and maintain accuracy, the Census Bureau is exploring conducting a portion of address canvassing through an in-office operation. For this approach to be fully successful, an automated solution for determining where in the country change is occurring is needed.

Market Research

The Census Bureau is engaging industry, academia and others to identify potential vendors, researchers and other interested parties based on their proposed sources, processes, software, and related techniques as solutions for detecting change for address data (postal and location), structures (housing units, other residences, businesses, and other buildings), road networks (street centerlines), and associated attribute data. The objective is for the Census Bureau to know ideally prior to when a new house, community, or other residence has been built or at the time it occurs or shortly thereafter. This would not necessarily include long term plans for housing units and developments. The Census Bureau also seeks information about conversions of structures and units from commercial to residential uses and vice versa. It is also of interest to know where housing and related buildings have been demolished and their addresses retired as well as those that have been abandoned and considered, by local government, to be unfit for habitation. The same objective applies to new or changed roads. Where are new roads constructed or existing roads moved and what attributes like road names change?

Market research questions about change detection of structures (housing units, other residences, businesses, and other buildings) and their address data (postal and location):

1. Do you have the ability to detect change between two vintages of address postal and location data?

2. Do the techniques identify change for a specific building or address?
3. Are these abilities scalable i.e. local →national?
4. Can you detect changes in structures as well as their associated attributes, e.g. physical and/or mailing address; residential, commercial, or government facilities; number of units within a structure, etc.?
5. Can you identify clusters of common housing unit types e.g mobile home/trailer parks; multi-unit; row houses/town houses, etc.?
6. Do you have the ability to identify areas where growth is not probable/possible (built-out areas zoning restrictions, etc.)?
7. Describe the accuracy and precision to which you can detect change for address and structure data. e.g. percent success rate and within +/- x meters of ground truth.
8. What sources (primary and supplemental sources used to identify change in the data such as imagery, postal files, building permits, etc. are used to detect change for:
 - a. Addresses;
 - b. Structures;
 - c. Roads?
9. How frequently do you acquire new data and perform change detection on that data?
10. Describe the process you use to validate the quality, completeness, and spatial accuracy of your data (particularly as it relates to structure physical location and physical or mailing addresses as well as unit type attribution (residential, commercial, etc.)?)
11. Do you employ crowdsourcing as a data acquisition source? If so, describe the process you use to validate the quality, completeness, and accuracy of information obtained through this process.

Market research questions about change detection of street centerline data:

1. Do you have the ability to detect change between two vintages of street centerline data?
2. Do the techniques identify change for a specific road segment?
3. Are these abilities scalable i.e. local →national?
4. Do you have the ability to detect change in the road centerline inventory?
5. Describe where you detect changes to street centerline data (coverage in U.S. Puerto Rico and the Island Areas).
6. How frequently do you detect change to the street centerline data?
7. Describe the accuracy and precision to which you can detect change for street centerlines. e.g. percent success rate and within +/- x meters of ground truth.
8. What are the primary and supplemental sources of your street data: obtained through field data collection, from source data obtained from partners, other sources (in office use of imagery), or a combination?
9. If you obtain street centerline data from partnership programs, describe your partners and the extent of their participation in your program.
10. Describe the process, software, and related techniques you use to detect change to street centerline data.
11. What supplemental data is acquired or attribution of the data, including classification of street type and street names/route numbers, etc.?
12. What file formats can you provide e.g. geodatabase, shapefile, etc.?

13. Do you employ crowdsourcing as a data acquisition source? If so, describe the process you use to validate the quality, completeness, and accuracy of information obtained through this process.

Additional Information

Participation

The U.S. Census Bureau is interested in receiving responses to this RFI from commercial vendors, academia and other interested parties that meet the following criteria:

1. Have capability to and or continuously conduct change detection for address, structure, road centerlines and associated attribute data with emphasis on completeness, and quality.
2. Use, offer or develop sources, processes, software, and related techniques as solutions for detecting change for address data (postal and location), structures (housing units, other residences, businesses, and other buildings), road networks (street centerlines), and associated attribute data.
3. Possess well-established quality assurance and quality control processes to ensure that the quality of the data is maintained. This includes processes to validate/verify that data sets adhere to established quality standards for both accuracy and completeness.
4. Have demonstrated experience with utilizing address and geospatial data to identify change or no change for specific locations scalable to the national level if necessary. This includes updating the spatial location and attribute data for existing features, as well as the addition of new features that did not previously exist.
5. Continuously perform change detection on structure, address, street centerline within a specified time period.

Instructions for Submissions

In addition to the responses to the questions and capabilities listed in the prior section of this RFI, please provide the following information:

- Name and address of the organization;
- Point of contact, including name, title, telephone number, and e-mail address

Create submissions using Microsoft Word or Adobe PDF formats with font size no smaller than 12-point pitch. Text shall be presented on 8 ½ x 11-inch paper with 1-inch margins. Submitters should limit their responses to no more than 20 pages. Submit responses to this RFI via email to Kelly.a.bannister@census.gov and lauren.ashley.withum@census.gov no later than February 1, 2015.

Disclaimer

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US Census Bureau

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