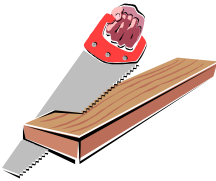


## CHAPTER 16: CROSS-CUTTING ISSUES



Royce Jones  
ESRI  
rjones@esri.com

### Theme Description

Three issues crosscut two or more of the data layers. A statewide resolution of these issues is required to increase the ability to share data among various users.

#### SPATIAL CO-REGISTRATION OF FEATURES

The lack of spatial co-registration of features is one of the biggest hindrances to both cartographic and analytic uses of GIS, and one of the most costly to rectify. One of the most frequently noticed examples of spatial mis-registration is between the parcel level data maintained by the counties, and the TIGER data maintained by the U.S. Census Bureau. The TIGER data was derived from smaller-scale, national data sets that are less spatially accurate than the parcel data derived from larger-scale, county data sets. Street centerlines from the TIGER data often do not follow the road casings on the parcel data. Sometimes they are off by only a few feet, sometimes they are off by hundreds of feet. One result is that cartographically you cannot efficiently use the TIGER lines (which have street names as attributes) to place street names in the parcel road casings. Another result is that analytically you cannot efficiently use census block data in an overlay analysis with parcel-base data. Both of these reduce the potential savings that can be realized through the sharing of data.

The solution is to use a common base layer and build the other layers in reference to it – spatial co-registration of features. This is part of the incentive behind the seven NSDI Framework layers. If everyone uses the same framework layers, then there is a better chance that their data products will spatially co-register. If a census block boundary follows a road, and a county zoning boundary follows that same road, then they should both use the same feature representation of that road in their data layer to ensure spatial co-registration. And that road feature should align within the road casing on the parcel data layer.

Spatial co-registration of features is very costly if done after the data has been created, although this can sometimes be justified by the benefit to be derived. Registering the TIGER data to the parcel data layer is an example of a high-benefit activity. GIS users creating new data layers should identify their framework basemap features and be sure to maintain spatial co-registration during their data creation process. This can be done at

little or no additional cost (it can sometimes be less costly) and the long-term benefit is significant.

## HAWAIIAN PLACE NAMES

Hawaiian place names and other Hawaiian words in databases can require special characters to correctly spell the word. These two characters are the macron and the glottal stop. The macron is placed above certain vowels to indicate a lengthening of the sound and the glottal stop is placed between two vowels to indicate a brief break in the sound. These special characters do not cause any problem in GIS data layers if used consistently and if coded consistently. Unfortunately, this has not been the case. Most data layers do not use the special characters at all. This can result in confusion because the special character can completely change the meaning of a word. Its absence can make two names look the same when they are not. It also makes comparisons and data relationships less precise when one data layer uses special characters and the other does not. Even if two data layers both use the special characters, they may not code them the same way resulting in mismatches at the data level.

Efforts are underway to standardize the spelling of Hawaiian place names and to standardize the way they are coded. The Hawai'i Board of Geographic Names and the University of Hawai'i are both involved in this. GIS users should follow these guidelines to improve their ability to share data sets.

## ADDRESSES AND GEOCODING

Geocoding is the process of locating a feature on the map based on its address. Addresses suffer from the same lack of standards in the use of Hawaiian names with special characters as described earlier. In addition, some counties use hyphens as part of their address numbers. Newer GIS software can handle hyphenated addresses, but older software could not. Also, in some counties, consistent addresses have not been assigned in the rural areas. All of these issues make geocoding less efficient.

Standards need to be defined both for the reference data sets that are used for geocoding and for the address data sets that are being geocoded. Ideally, once the standard reference data set has been established, users entering address data will be able to quickly check and make sure they have a valid address. This issue is critical for emergency response and homelands security, as well as for many health, elections, and business users.