



TIGER

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WHAT IS TIGER?

- Topologically Integrated Geographic Encoding and Referencing
- TIGER/Line files
 - Digital database of geographic features covering entire US
 - Roads, railroads, rivers, lakes, political boundaries, census statistical boundaries, etc.
 - Contains information about features
 - Location in latitude/longitude, name, type of feature, address ranges for most streets, geographic relationship to other features, etc.



WHAT IS TIGER?

- Topologically – system uses theories of topology, graph theory, and associated fields of mathematics for geographic structure
- Integrated – data base relates, or integrates, the automated description of earth's surface and boundary features into a single computer data base
- Geographic – data base will include all census-relevant information regarding the earth's surface



WHAT IS TIGER?

- Encoding – data stored in computer-readable form
- Referencing – automated access to and retrieval of census-relevant geographic information assures consistency of results and prevent confusion in dealing with maps and geographic classifications

WHAT IS TIGER?

- Products do not include demographic statistics
- TIGER/Line is by-product of data base
- System uses vector format
- Information stored in data base through listings and directories linked and cross-referenced to each other by pointers
 - Line segments and points "tagged" with its own geographic codes

HOW WAS TIGER CREATED?

- USGS scanned 1:100,000-scale maps
 - Captured water and transportation features
 - Ex: rivers, roads, railroads, major power lines and pipelines
 - Assigned feature classification codes to all water, railroad, and major power line and pipeline data
 - Ex: "lake", "river",
 - Also provided unprocessed road data from maps

HOW WAS TIGER CREATED?

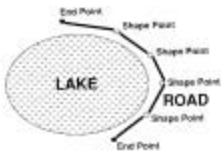
- Geography Division of Census Bureau
 - Assigned feature classification codes to road data supplied by USGS
 - Ex: "freeway", "city street", "footpath"
 - Provided USGS computer tape field of processed road files
 - Integrated GBF/DIME file information

TIGER FILE DATA STRUCTURE

- Information classified as 0-, 1-, and 2-cells
 - 0-cell ⇒ feature intersection or end point
 - 1-cell ⇒ line connecting two 0-cells
 - 2-cell ⇒ smallest area formed by linked set of 1-cells



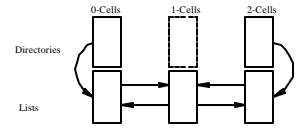
TIGER FILE DATA STRUCTURE



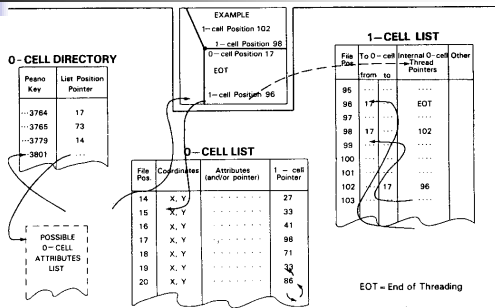
- Shape points provide coordinate values that describe shape of feature segments that are not straight

TIGER FILE DATA STRUCTURE

- Core is 3 lists containing each of topological elements shown on map
- No directory for 1-cell list because access to list comes by referring to end points of 1-cell, codes for surrounding areas, or one of 1-cell attributes



TIGER FILE DATA STRUCTURE



NOTE: The actual fields in each list and directory record will vary as we finalize the TIGER File.

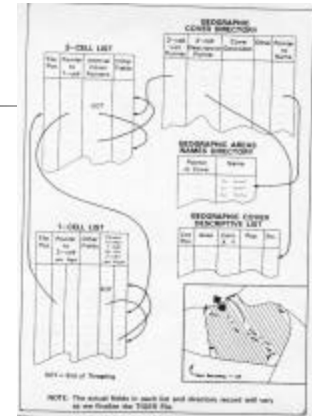
TIGER FILE DATA STRUCTURE

- 0-cell files contain coordinates for all feature intersections and end points
- 0-cell directory contains one record per 0-cell
 - One-way entry route so there are no pointers to directory
 - One-to-one correspondence with 0-cell list
 - Purpose it to find rapidly the nearest point in TIGER file to a given point on map – uses Peano key
- 0-cell list contains actual x- and y-coordinates for point, selected attributes of point, plus pointer to 0-cell attribute list

TIGER FILE DATA STRUCTURE

Coordinates	X	Y
	404	196
Binary Representation	110010100	011000100
Merging Into Key	1 0 1 1	
Complete Peano Key	101101001000110000	

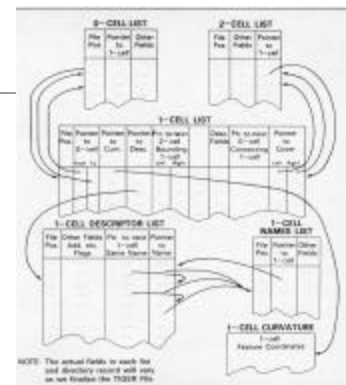
TIGER FILE DATA STRUCTURE



TIGER FILE DATA STRUCTURE

- 2-cell list – one-to-one correspondence between these two 2-cell files
- Smallest 2-cell called “atomic 2-cells” representing areas created by overlaying all roads, rivers, railroads, and boundaries shown on map
- Entry made through 2-cell directory, a sequential list of all 2-cells, to the 2-cell list
- List contains several fields of data and several pointers

TIGER FILE DATA STRUCTURE





TIGER FILE DATA STRUCTURE

- 1-cells connect 0-cells and bound 2-cells
- Linear features on map and central element of TIGER structure
- 1-cell list records randomly in 1-cell list
- Records contain both feature attributes and/or pointers to other files containing attributes
- Have pointers to 0-cell list, 2-cell list, curvature descriptor list, 1-cell descriptor list, and even to other records within 1-cell list