

Base Maps from the Internet

Steps in Making an OCAD Map from Internet Data

- 1) Get the boundaries of the property
- 2) Find any related websites
- 3) Get textual information about the area of interest
 - a. Full name of the area
 - b. Full address and zip code
 - c. Phone number of a contact person
 - d. Latitude and longitude of the general area
 - e. County the property is in
 - f. Name of the corresponding topographic map quadrangle
 - g. Declination of the area
- 4) Get raster images of the area
 - a. Get a topo map segment of the area (DRG)
 - b. Get aerial photographs of the area (DOQQ, etc)
 - c. Scan in any other reference maps, etc
- 5) Get vector data for the area
 - a. SDTS data
 - b. DEM data
 - c. TIGER census data
- 6) Prepare raster images for use as a template in OCAD 8
 - a. Georeference raster images
 - b. Export raster images to GEO-TIFF file format
- 7) Prepare vector data for import in OCAD 8
 - a. Export vector data layers to DXF file format
- 8) Create a new map in OCAD 8
 - a. Open aerial as a template in OCAD 8
 - i. Rotate OCAD map for declination
 - b. Import vector data into OCAD
 - i. Convert object attributes to OCAD symbols
- 9) Hand-draw objects from template
- 10) Fieldwork
 - a. GPS waypoints and tracks
 - b. Hand-drawn field notes
- 11) Add artwork to OCAD map
 - a. Title
 - b. Scale
 - c. Magnetic North lines
 - d. Legend
 - e. Logos, artwork, etc
- 12) Prepare OCAD map for distribution
 - a. Export map in Adobe PDF file format, or
 - b. Print the map

Base Maps from the Internet

Types of Mapping Data, and Terminology

Raster Images (DRG - Digital Raster Graphic)

- Topographic maps
- DOQQs (Digital Orthophoto Quarter Quadrangles)
- High-resolution color aerials
- Other scanned maps

Vector Data

SDTS (Spatial Data Transfer Standard - obsolete?)

DLG Layers (Digital Line Graph)

- Boundaries (BD)
- Hydrography (HY)
- Hypsography (HP)
- Manmade Features (MS)
- Non-Vegetation Features (NV)
- Vegetation Surface Cover (SC)
- Transportation (TR)
 - Roads & Trails
 - Railroads
 - Miscellaneous (Pipe & Transmission Lines)

DEM (Digital Elevation Model)

- 30-meter grid
- 10-meter grid

Tiger Census Data

GPS Waypoints and Track Logs

<http://www.3dartist.com/WP/dempy/help/glossary.htm>

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Differences between Raster Images and Vector Data

	<u>RASTER</u>	<u>VECTOR</u>
<u>Availability on Internet</u>	Easily found - TerraServer, Topozone, MapQuest, etc	Esoteric - various USGS sites, GeoComm, some county websites; Sometimes in FTP environments. Not all data layers are available for many areas (SDTS)
<u>Software tools needed to view or process</u>	Common browsers such as Paint, Internet Explorer, Netscape	Specialized utilities such as Global Mapper - not cheap
<u>Typical file formats</u>	BMP, JPG, GIF, TIF	SDTS (DDF), DXF, E00
<u>Geo-referenced?</u>	Maybe	Probably, but in what coordinate system?
<u>Layered?</u>	No	SDTS, yes (when available) - TIGER, no (somewhat filtered)
<u>Usage in OCAD</u>	Template - if not georeferenced, can be (best-fit) calibrated to match existing references, to serve as background for tracing in new objects	Import and translate objects/attributes into OCAD symbols - then cull out outlying objects
<u>Area covered</u>	Variable - commonly determined by user's zoom level. Pixel resolution (typically) higher with smaller area. Otherwise, huge file for large area	Typically on topo quad or county level
<u>Scale</u>	Variable	Typically 1:24,000
<u>Accuracy</u>	Variable - DOQQs very good	Typically topo quality
<u>Up-to-date?</u>	Huh?	Huh?

GPS Field Checking

Limitations of the Global Positioning System

- Satellite ephemeris errors (short-term orbit variation)
- Satellite atomic clock variation
- Satellite malfunctions leading to inaccurate data
- Satellite signal propagation delay
- Satellite coverage
- Satellite geometric configuration
- Multipath error
- Steep terrain blocking signals
- Tree canopy
- Receiver clock variation
- Receiver's virtual "compass" doesn't work when stationary

<http://www.trimble.com/gps/errors1.html>

Map Making 101

The USGS Position on the Distribution of GIS Data?

1997:

“...USGS personnel hesitated to release the [*dlgv32 and dem3d*] viewers to the public. There were concerns that the private sector would consider the release of Government-built software to be unfair competition and that the release would raise customer expectations to levels the USGS would not be able to meet. Software development is not part of the USGS's primary mission, and there was no guarantee that the agency would be able to provide support and updates.”