



topoCap™ 3.5

ProCaptura's data capture product for conversion of topographic maps

With this product you can digitize contour-, water- and situation-information from topological maps to GIS objects. The process is semi automatic, with a number of automatic functions which make our approach superior to traditional digitizing. The process will be supervised by an operator that at any point can control the results and do corrections. The process will also discover inconsistencies in the original. TopoCap™ minimizes the chances of introducing errors and creates accurate and high quality data to be used in any GIS.

Input:

- ❖ Scanned binary raster files (TIFF 1024x1024 tiled) of maps/drawings/foils. Three binary layers with contour-, water and situation-data. Sufficient resolution to process drawing (min 3 pixels line width for good results)
- ❖ Optionally, one scanned color or grey scanned map used as background.

Functionality:

- ❖ Three production processes, one for each type of data; contours, water and situation.
- ❖ **Common functionality:**
 - Automatic raster to vector conversion including: operator defined accuracy down to +/- 1 pixel
 - Closing gaps in curves, data reduction of vector points, filtering of noise and text
 - Automatic/ manual map border definition
 - Automatic problem finder and guidance to actual position on map
 - Operator controlled parameters for all automatic processes (tailoring a production for a specific map)
 - Full editing capabilities for vector data with multilayer raster background. Create, edit and delete of point-, linear-, region-, and text-types of vector data including maintenance of topological data structures

- Redo automatic processes after editing
- Configurability of user specific types for point- linear- and region-object types

❖ Contour data processing:

- Automatic calculation of heights based on a few known spot heights
- Automatic recognition of index curves
- Interactive add and edit spot heights
- Multiple line-, point- and region- types
- Interactive digitizing of regions
- Optionally exclusion of data inside a region
- Automatic connection of contours to regions
- Automatic consistency control: extreme value check (inside box), none contiguous contours (loose ends), suspicious sharp bends, crossing contours, contours without heights, contours with conflicting heights

❖ Water data processing:

- Automatic segmentation of water regions and linear water objects
- Interactive adding water region types
- Automatic creation of water regions of different types (lakes, wide rivers, etc)
- Interactive digitizing of point objects (wells, fountains, spring, etc.)
- Interactive linear object classification (streams, canal, coastline, pipeline, etc.)

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- Handling of interrupted rivers and streams (bridges, etc.)
 - Digitizing of flow directions
 - Automatic consistency control: all curves are classified to specified object types, water objects are not isolated, no conflicting region classifications
 - ❖ **Situation data processing:**
 - Interactive classification of different land use regions
 - Objects from the water layer and the contour layer may be part of regions, e.g. river bank is border of land use.
 - The situation layer may contain water and contour data; e.g. functionality described in contour data processing and water data processing are also available
 - Automatic creation of region types (areas)
 - Overlapping regions allowed
 - Interactive digitizing of point objects (wells, fountains, spring, etc.)
 - Interactive linear object classification (streams, canal, coastline, pipeline, etc.)
 - Automatic consistency control: no conflicting region classifications; all curves are included in objects (no missing data)
 - etc.
 - Linear objects with height value: contours and index contours, depressions, escarpments, cliffs, ridges, etc.
 - Region objects: escarpments, cliffs, ravines, landslides, etc.
 - Text objects: international character set, linear and rotated text
 - Comments / redlining
 - ❖ **Water objects**
 - Point objects: wells, fountains, spring, water faucet, etc
 - Linear objects: stream, dry stream, coast line, dam, canal, pipeline, etc.
 - Region objects: sea, lake, river, canal, waterfall, pool, etc.
 - ❖ **Situation objects**
 - Point objects: height points/trigonometric points, etc.
 - Linear objects: roads, paths, cable paths, railroads tracks
 - Region objects: vegetation areas/different types, roads, parking lots, etc.
 - ❖ **Georeferenced coordinates** (if georef input) or raster coordinates
 - ❖ **Output formats:**
 - Shape
- Output:**
- ❖ **Contour objects**
 - Point objects with height value: spot heights, spot height helper point, cave,

Platform requirements:

- ❖ LINUX Redhat 9 (open source)
- ❖ PC P4 or similar, +512MRAM, +40Gbyte disc, state-of-the-art graphic card

