Faculty Profile

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Shiva Reddy Koti holds M.Tech in Geomatics Engg. from IIT, Roorkee and B.E in Information Technology from Govt. Engg. College , Bilaspur (C.G).

His area of expertise is in the field of geospatial software development and Health GIS. He has vast teaching and R&D experience in geospatial software development ,Health GIS, ODK, databases, programming , GIS and Web GIS.

He is QGIS 3 contributor and the author of QGIS plugin *QRealTime.* He is an active open source contributor. His FOSS4G contributions can be followed at https://github.com/shivareddyiirs/

Data Inputting and Editing in GIS

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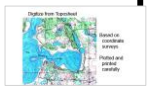
How we used to collect spatial data

How we collect spatial data now

DATA SOURCES and INPUT

Manually digitizing from image or map sources

- manually drawn maps



- legal records
- coordinate lists with associated tabular data
- Aerial photographs

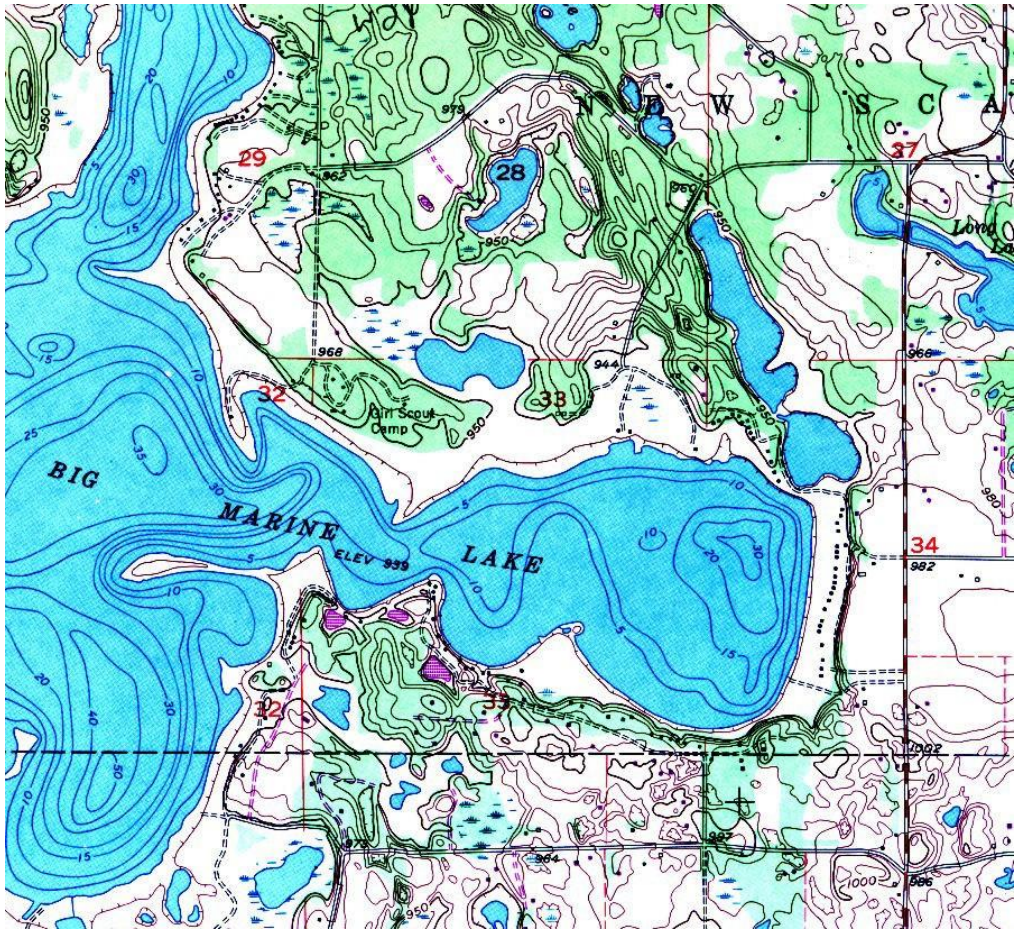
Field coordinate measurement

- Coordinate Surveying
- GPS

Image data

- Manual or automated classification
- direct raster data entry

Digitize from Toposheet



- Based on coordinate surveys
- Plotted and printed carefully

Field Measurement

Coordinate Surveying

(courtesy NGS)

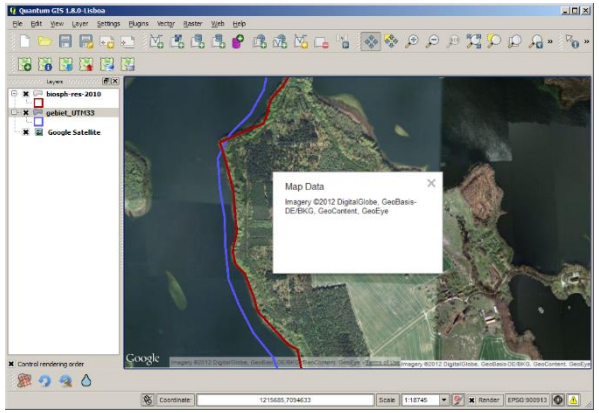
GPS

Satellite and Aerial Imagery

Image Data

Spatial Data in a GIS

Scanner and Digitiser



Scanner

- Drum Scanner
- Flat Bed Design

Scanner Quality (dpi):

dpi: Dot per Inch

सभी प्रतिभागियों से अनुरोध है कि प्रश्नोत्तरी में भाग लेने हेतु वे ई-क्लास में लॉगिन करें:

URL : https://eclass.iirs.gov.in/login

नोट: प्रतिभागी जो पहले से ही ई-क्लास में लॉगइन हैं , प्रश्नोत्तरी में भाग लेने हेतु कृपया अपने वेब पेज को रिफ्रेश करें ।

All the Participants are requested to login in E-CLASS :

URL : https://eclass.iirs.gov.in/login

Note : Participants who are already logged in, please refresh your Web Page to Participate in the quiz.

Quiz

1. If Scanner properties are as below:
   Scanner pixels: 1000X1000
   And paper size : 10cm X 10 cm
   What is the DPI of the scanner?

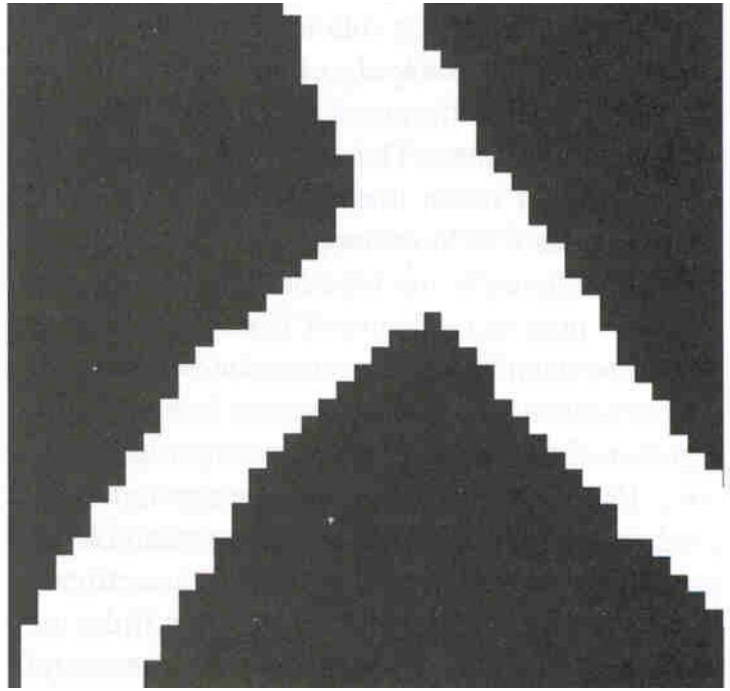
a) 254
b)25.4
c)2.54
d) None of the above

2. If Minimum Mapping Unit of a map is .25 mm then what should be the DPI of Scanner?
   a) >100
   b) <100
   c) >200
   d) >500

Manual Digitisation Overview

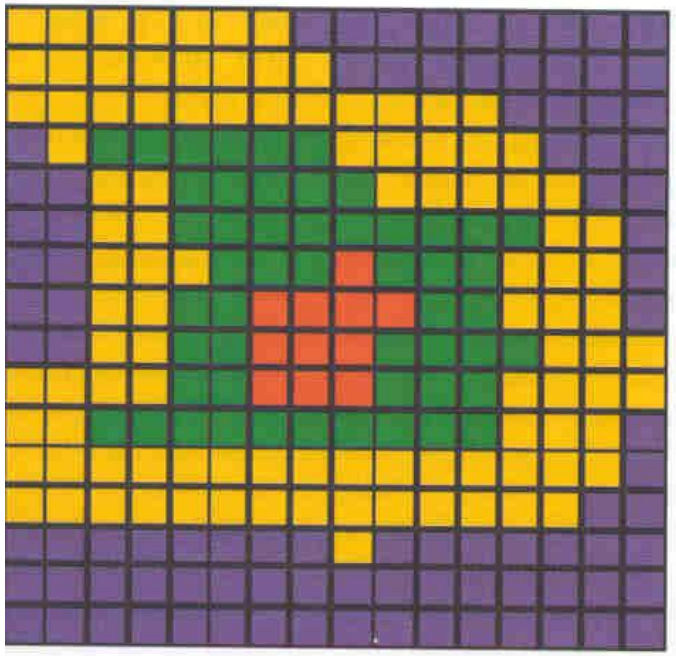
1. Scan map or image
2. If image not referenced, collect ground coordinates of control points
3. Digitize control points (tics, reference points, etc.) of known location
4. Transform (register) image to known coordinate system
5. Digitize feature boundaries in stream or point mode

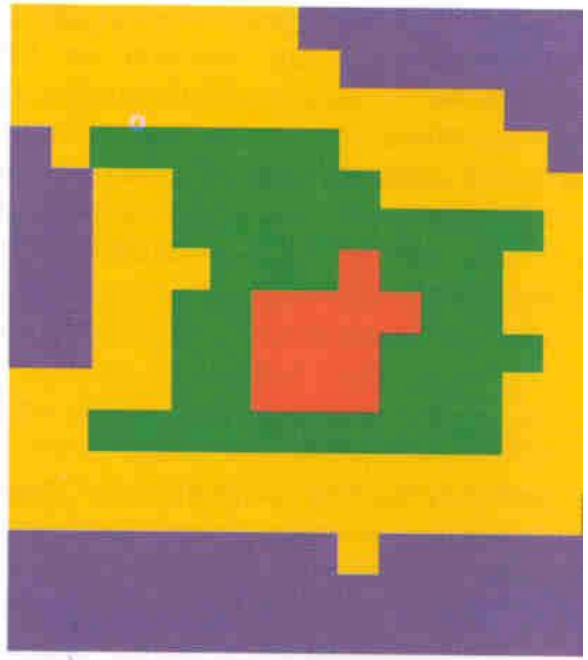
Scanning



Scanning Line : Multiple Pixels

Scanning and Digitisation

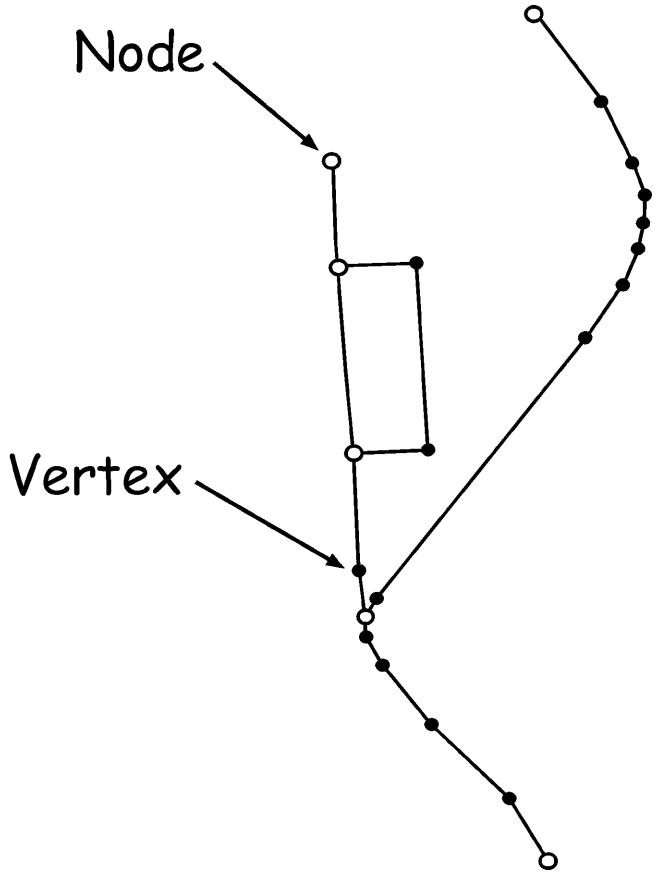




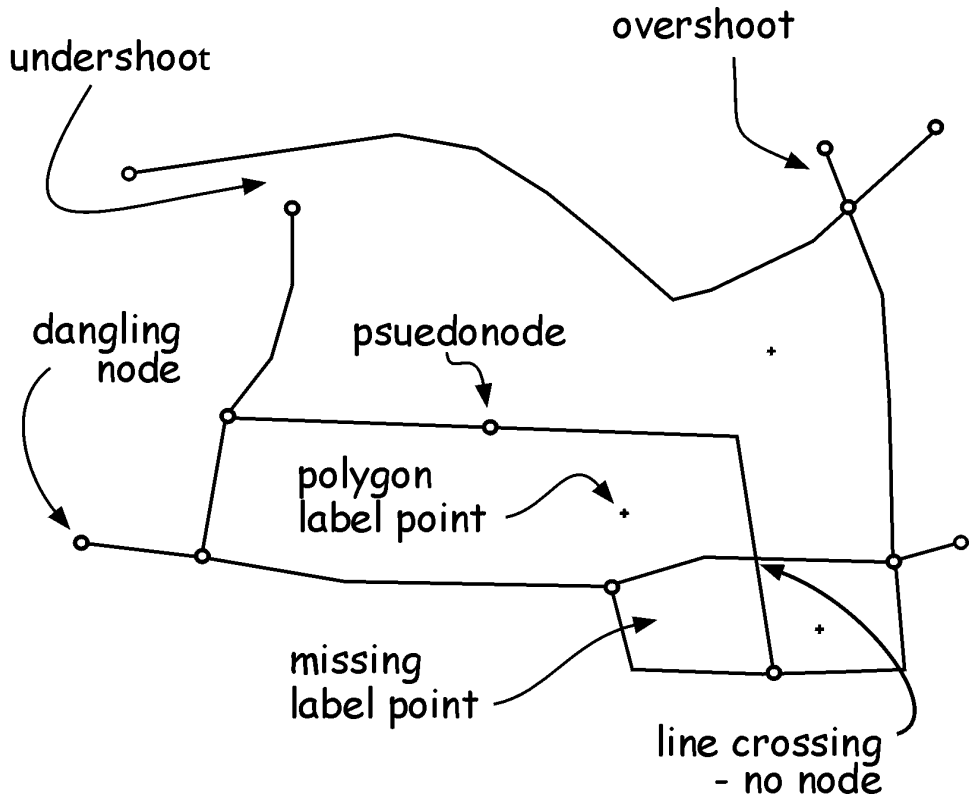
Manual and Automatic Digitisation

Manual Digitizing

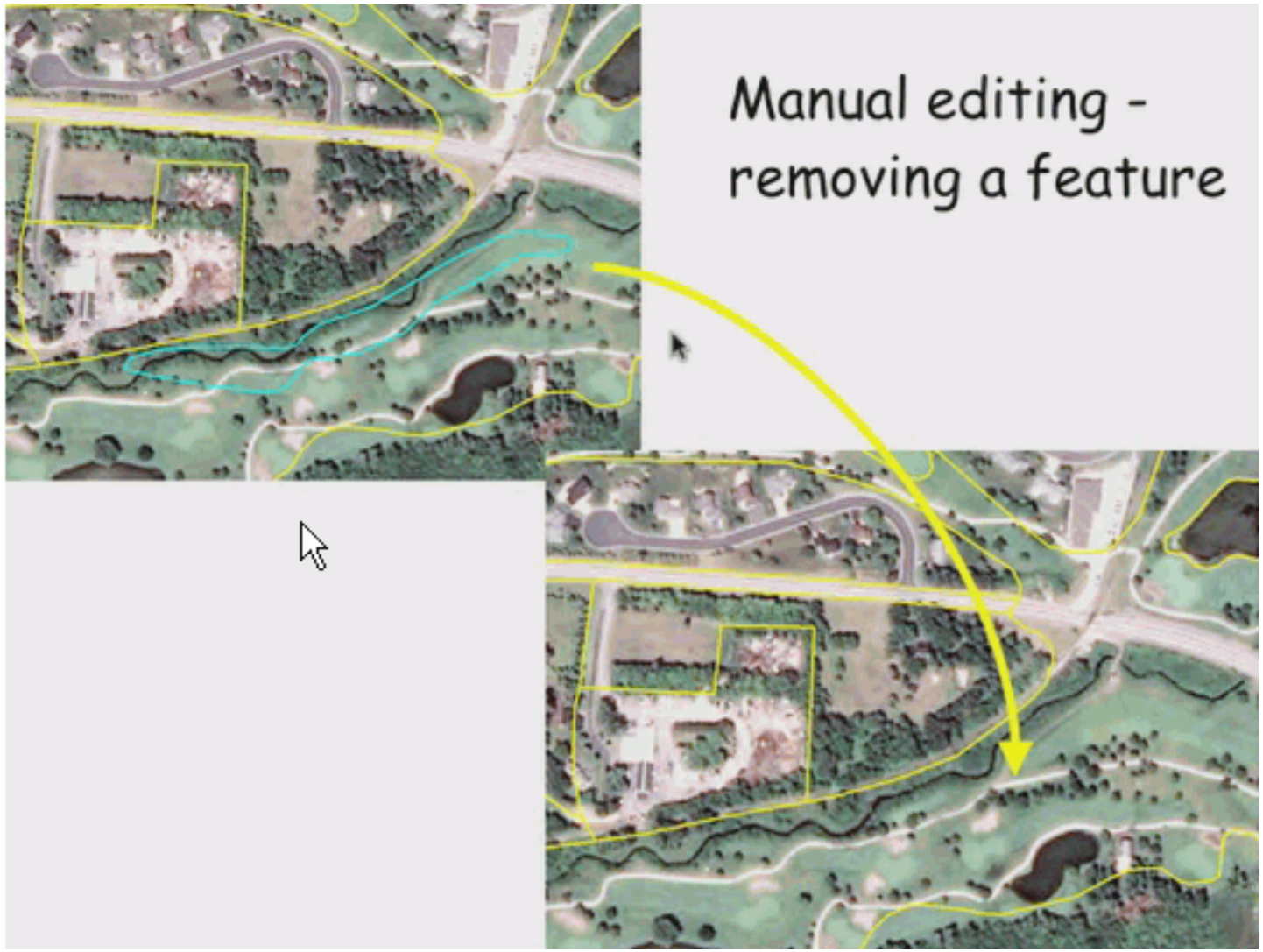
- nodes at line endpoints
- vertices define line shape

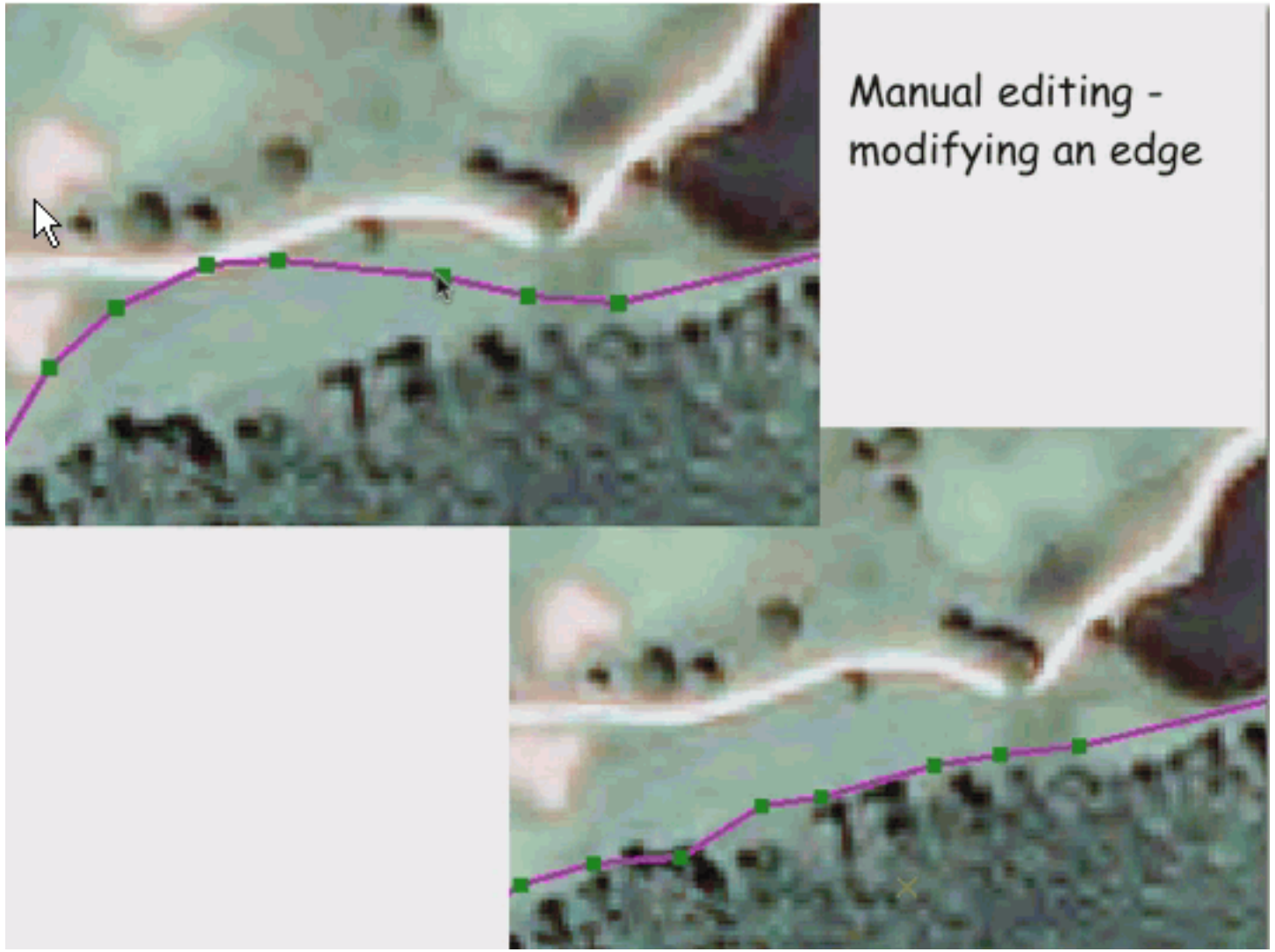


Manual Digitizing
common errors that require editing



Correcting errors


Manual editing -
removing a feature

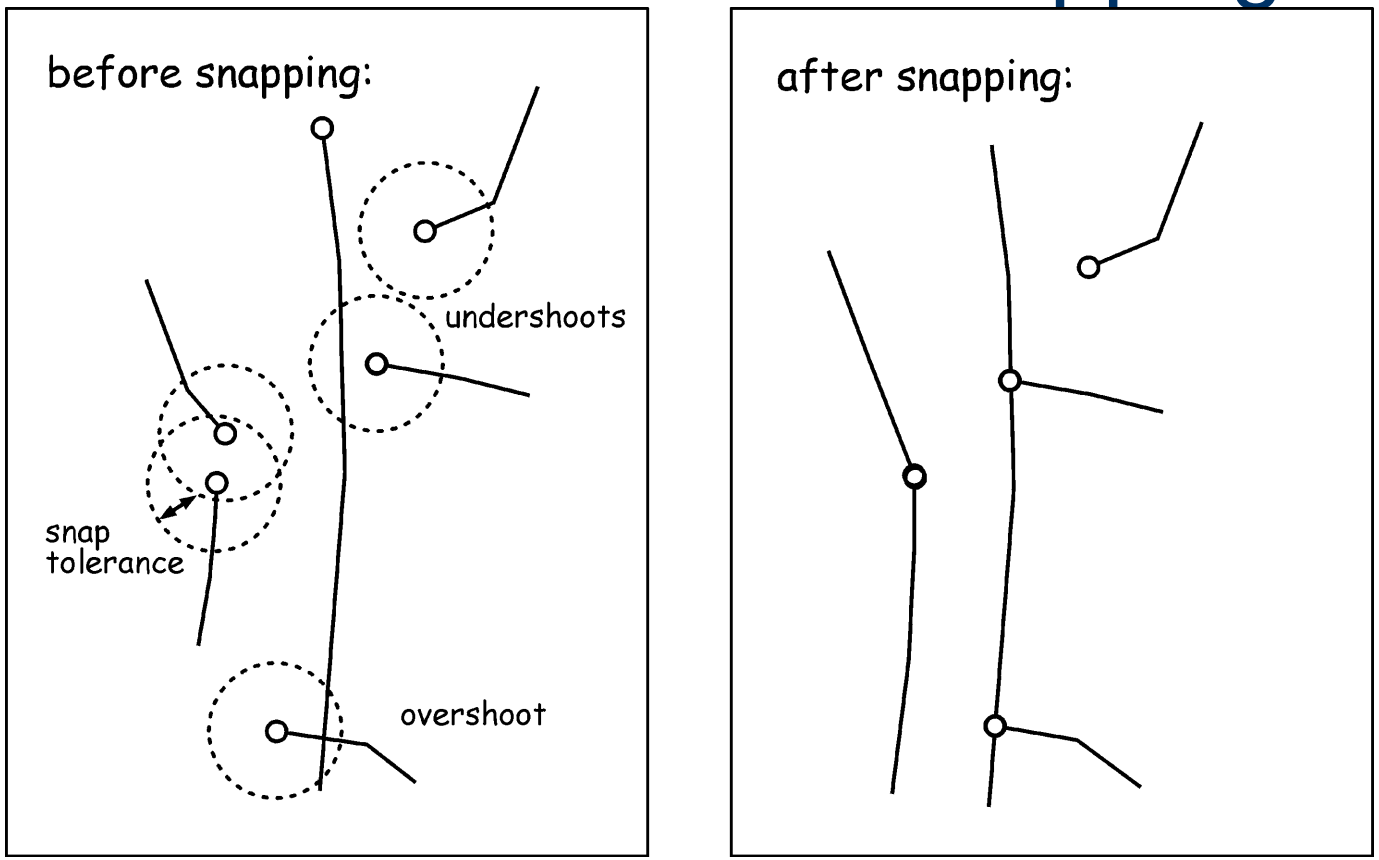

Manual editing -
modifying an edge

Editing

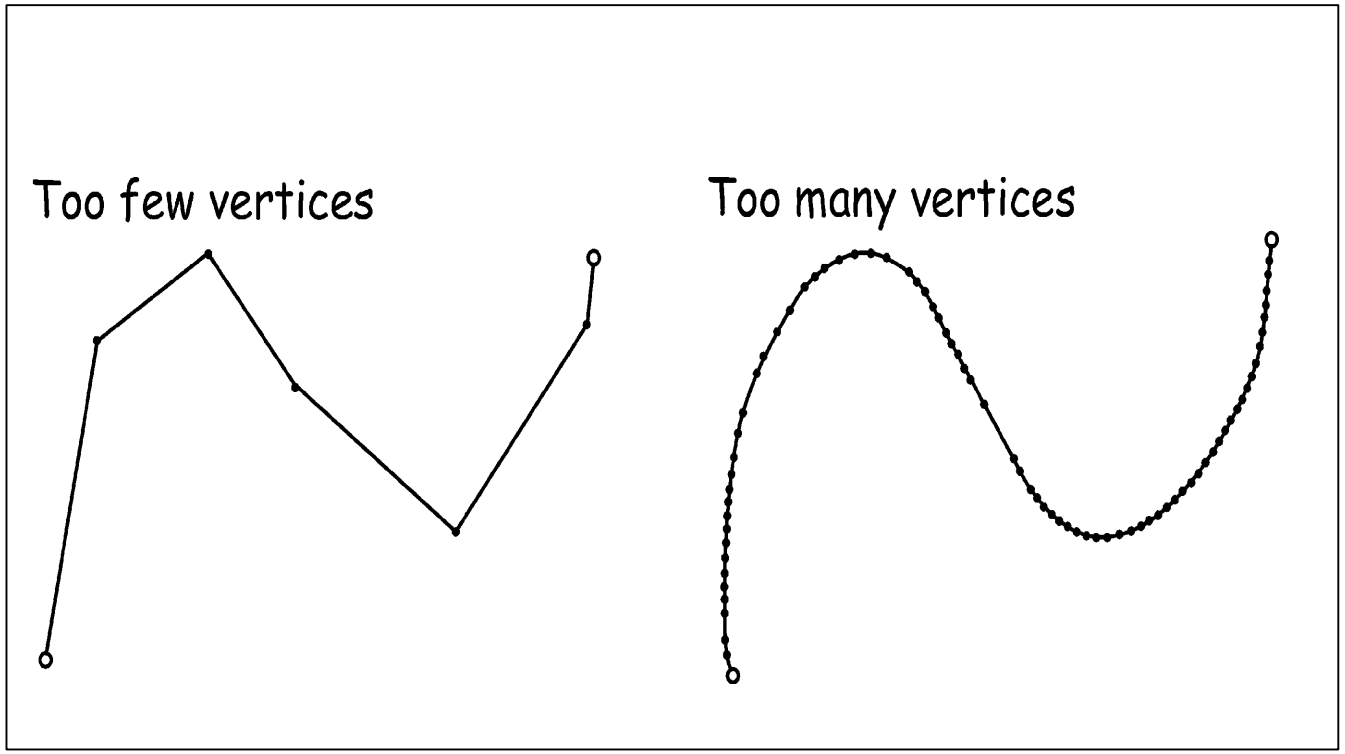
Line snapping:
When a vertex or node is "close" to a line or end point, the lines are "snapped" together

Point snapping:
Points which fall within a specified distance of each other are snapped (typically, on point eliminated).

Snapping


before snapping:
undershoots
snap
tolerance
overshoot
after snapping:

Manual Digitizing – Vertex Density

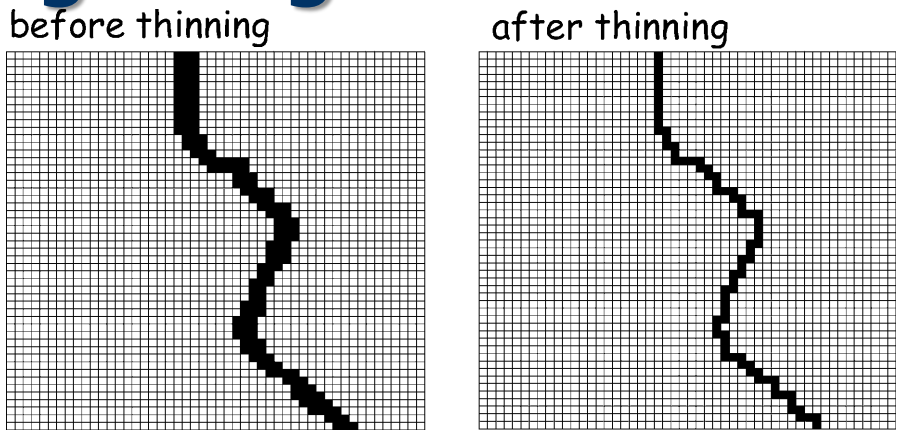


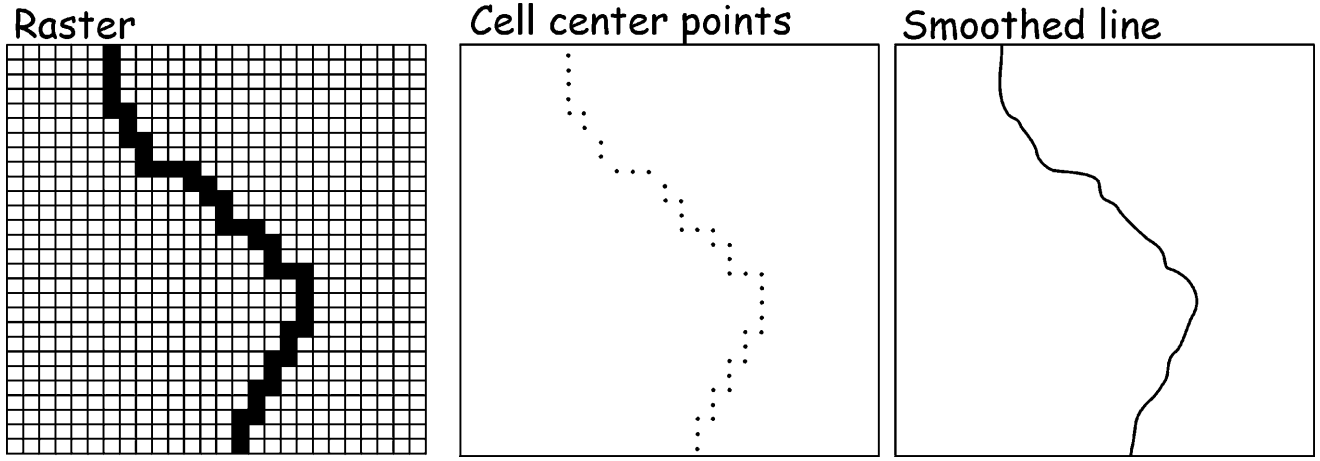
Automated Digitisation

Digitizing Maps - Automated Scanners

- Suitable threshholding allows determination of line or point features from the hardcopy map.
- Scanners work best when very clean map materials are available
- Significant editing still required (thinning, removing unwanted features)

Cell Thinning and Vectorizing– After Scan-Digitizing





Direct Vector and Raster Digital Data input

- GPS Files
- ASCII/EXCEL files
- Geocoded Satellite Image
- Image Classification outputs
- Vectorisation of raster

Summary

Digitisation Overview

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- Digitize control points (tics, reference points, etc.) of known location
- Transform (register) image to known coordinate system
- Digitize feature boundaries in stream or point mode.
- Edit

Thank You

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