

ÇEV 361

Coğrafi Bilgi Sistemleri ve Uzaktan Algılama

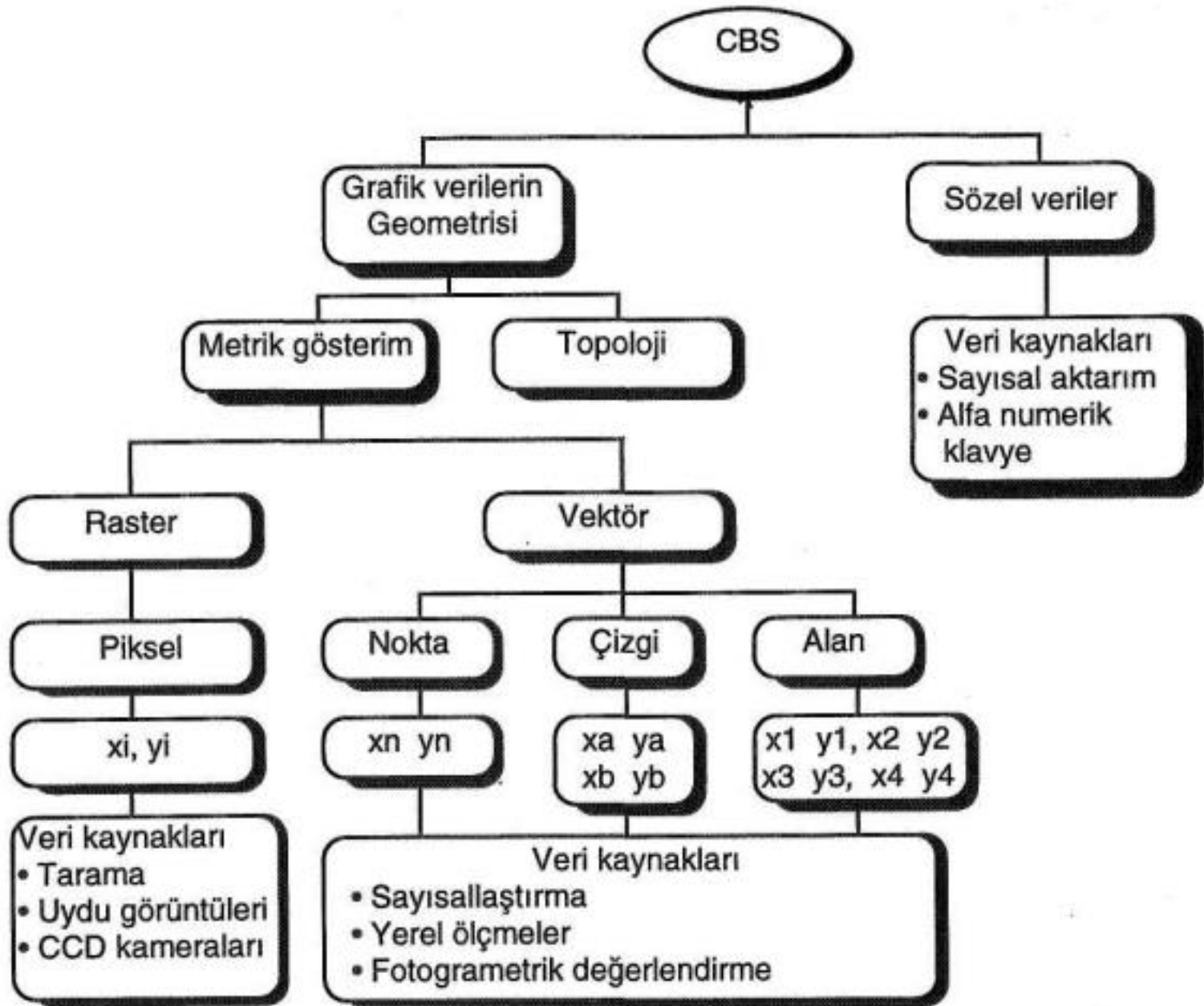
CBS'de Veri Yapıları

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<http://www.ozgurzeydan.com/>

CBS Veri Modelleri

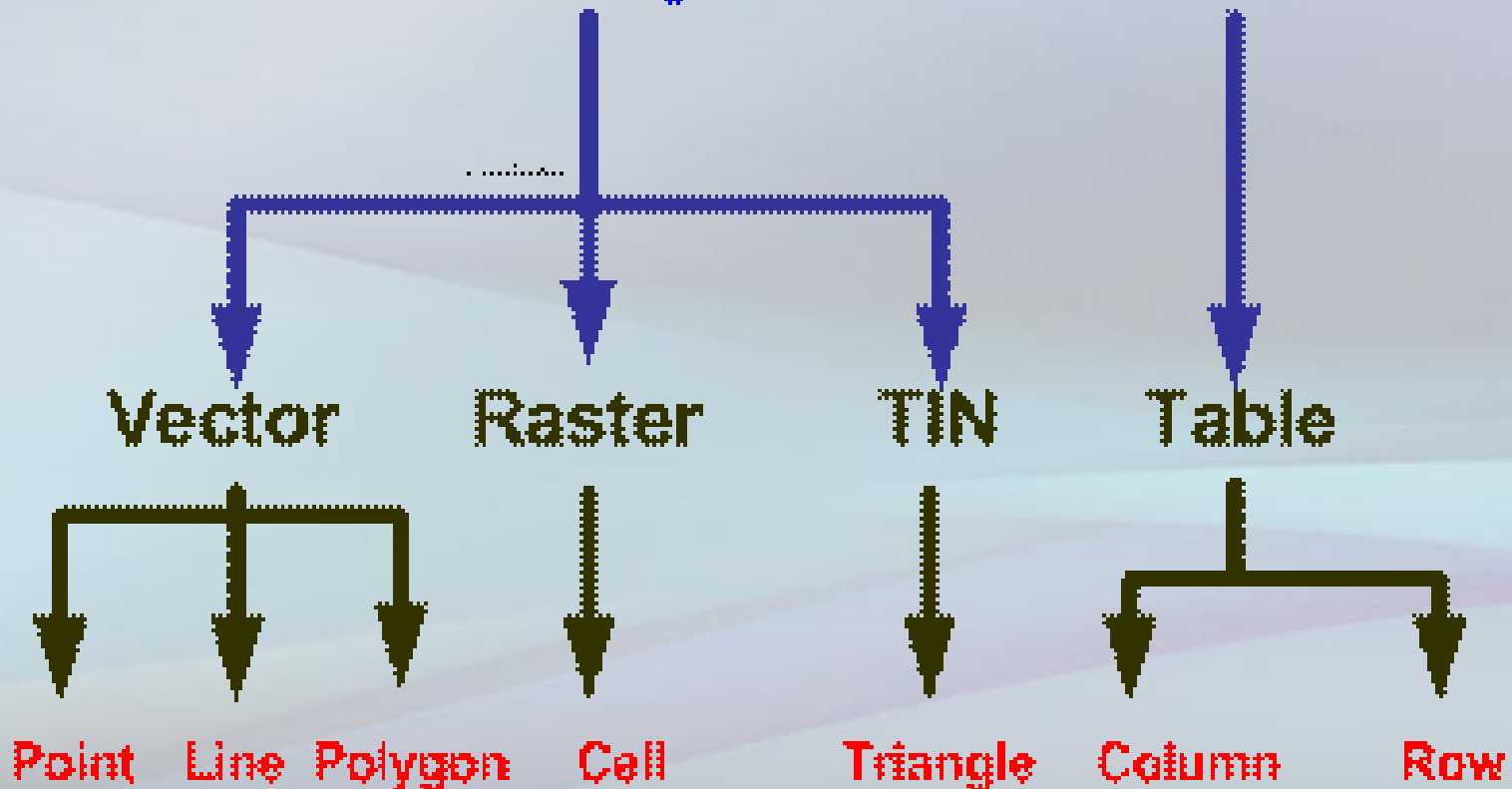
- **Vektörel Veri Modeli:** Vektörel veri modelinde, nokta, çizgi ve poligonlar (x,y) koordinat değerleriyle kodlanarak depolanırlar.
- **Raster (hücresel) Veri Modeli:** Hücresel (raster) veri modeli daha çok süreklilik özelliğine sahip coğrafik varlıkların ifadesinde kullanılmaktadır.



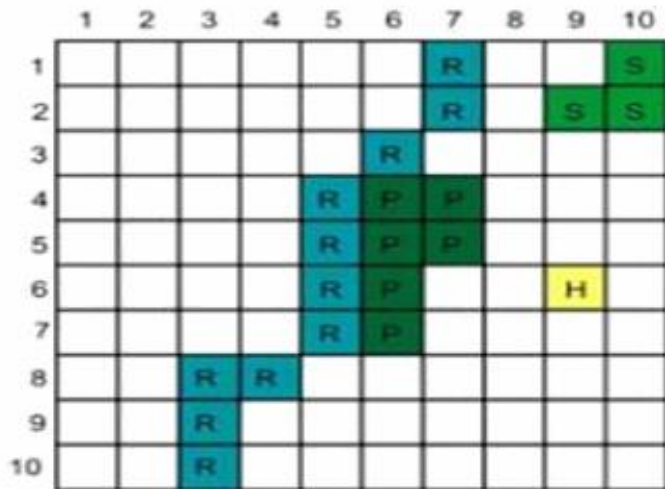
Şekil 2: CBS Veri Tipleri ve Kaynakları

CBS Veri Türleri

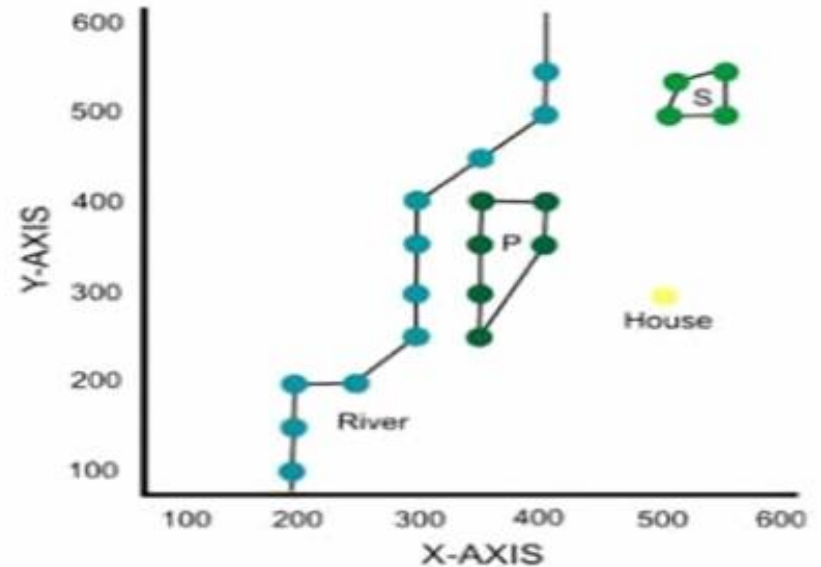
GIS = Map + Database



Raster ve Vektör Veri Yapıları

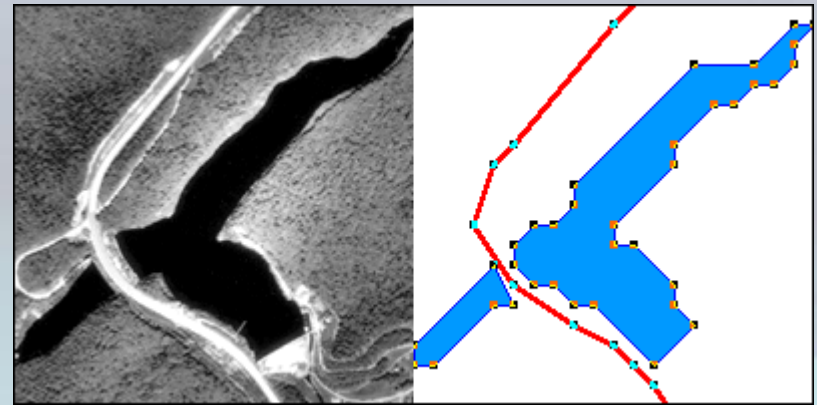
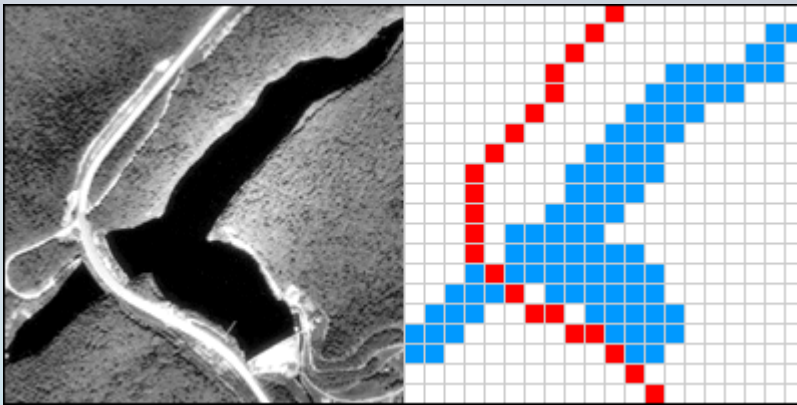


Raster Veri Yapısı



Vektör Veri Yapısı

Raster ve Vektör Veri Yapıları



Vektörel Veri Türleri

NOKTA

○
(X,Y)

ÇIZGI

(X₁,Y₁) ——— (X₂,Y₂)

**ALAN
(POLİGON)**

**Dizi
(ÇOKLU ÇIZGI)**

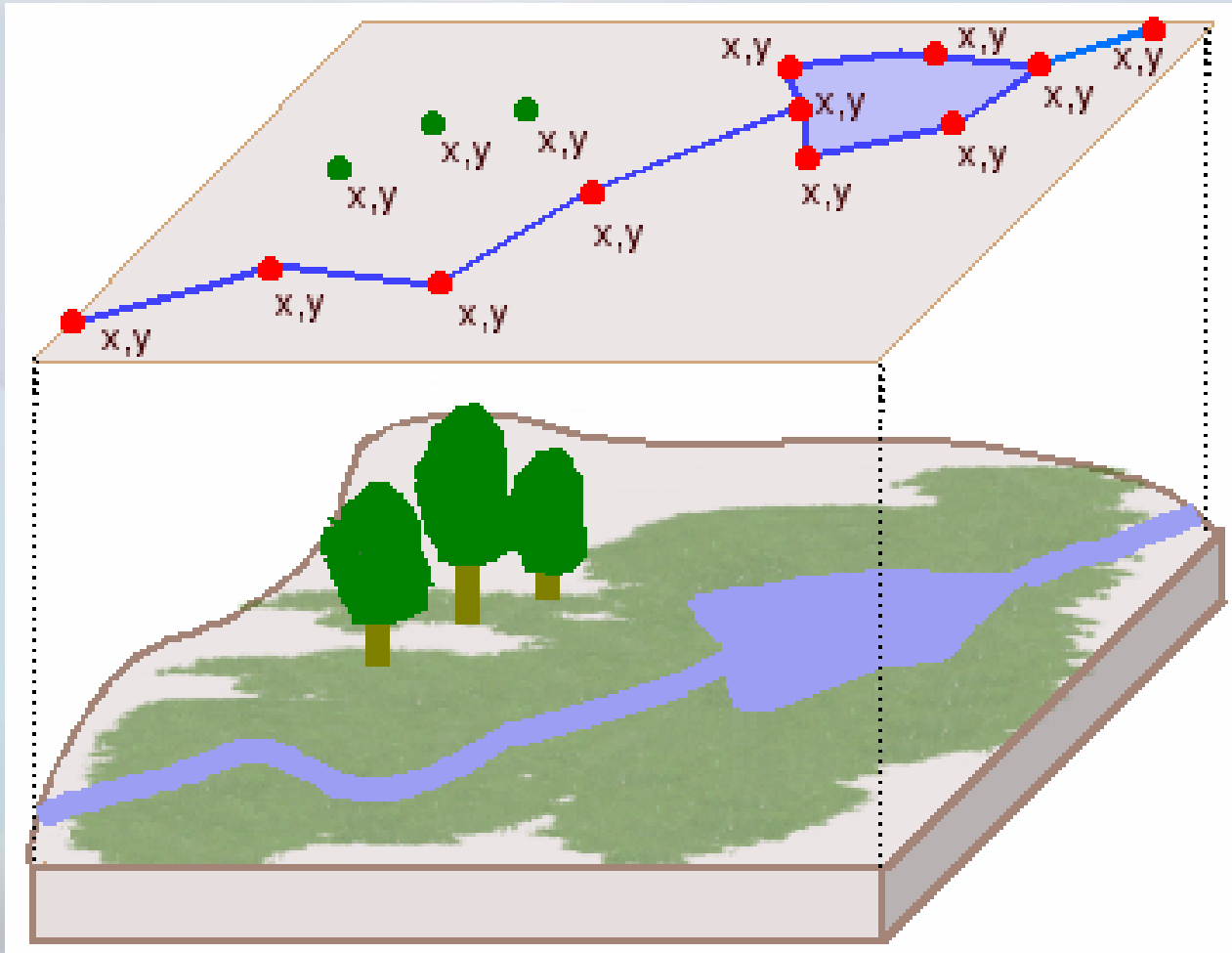
(X₁,Y₁) — (X₂,Y₂) — (X₃,Y₃) — (X₄,Y₄) — (X₅,Y₅) — (X₆,Y₆)

(X₁,Y₁) — (X₂,Y₂) — (X₃,Y₃) — (X₄,Y₄) — (X₅,Y₅) — (X₆,Y₆) — (X₁,Y₁)

Vektörel Veri Türleri - Örnekler

- **Noktasal veri**
- Cami, direk, kuyu, ağaç, numune alma noktası...
- **Çizgi verisi**
- Yol, akarsu, fay hattı, kanalizasyon hattı...
- **Poligon verisi**
- Göl, şehir, ülke, orman alanı, tarım alanı...

Vektörel Veri



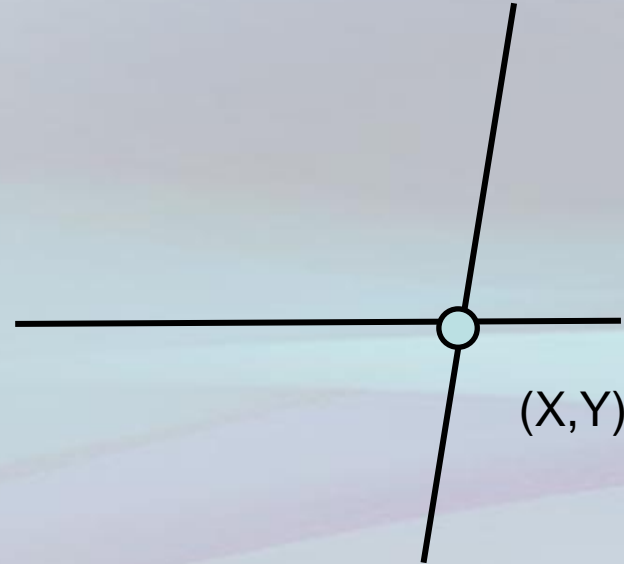
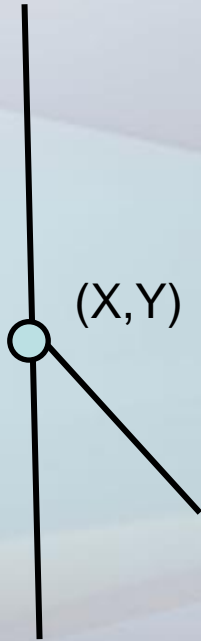
<http://www.geography.hunter.cuny.edu/~jochen/GTECH361/lectures/lecture05/concepts/03%20-%20Geographic%20data%20models.html>

Vektörel Veri Türleri - Örnekler

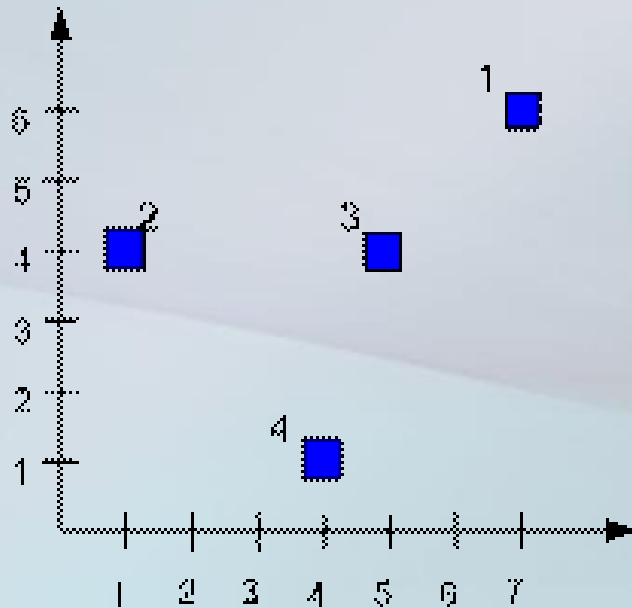


Düğüm Noktası (Node)

- En az 3 veya daha fazla çizginin kesiştiği noktadır.



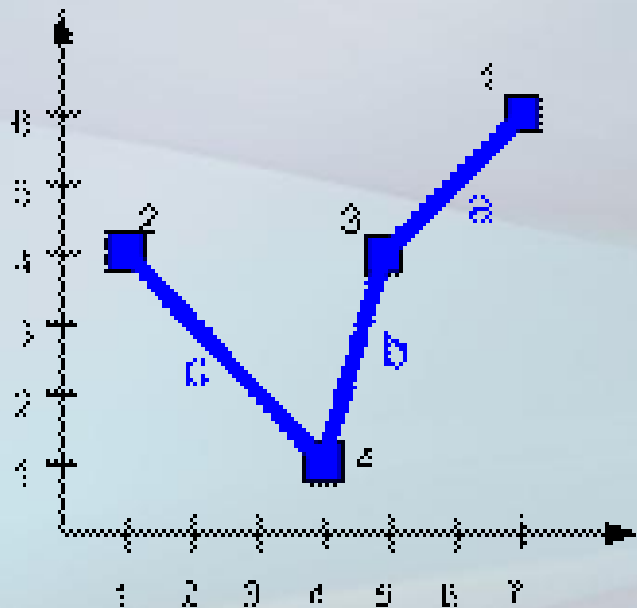
Noktasal Veriler



Point No	X	Y
1	7	6
2	1	4
3	5	4
4	4	1

Point No	deep	amount
1	12.35	63.45
2	25.79	79.83
3	3.50	24.34
4	17.52	69.23

Çizgisel Veriler

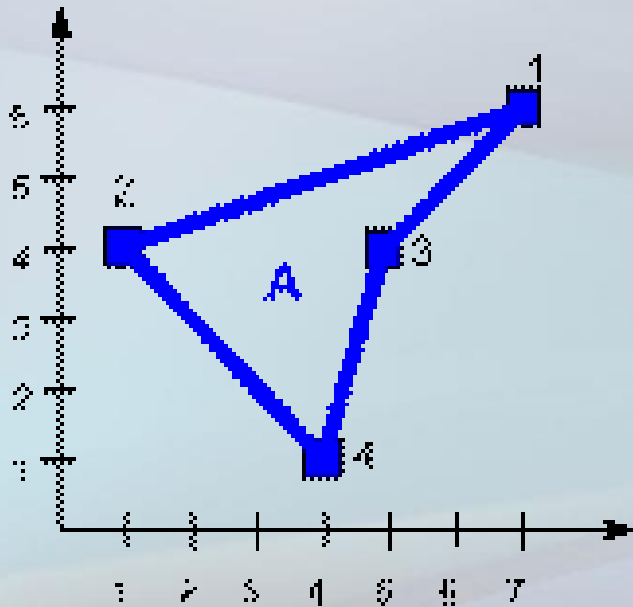


Node No	X	Y
1	7	6
2	1	4
3	5	4
4	4	1

Line	First Node	Last Node
a	1	3
b	3	4
c	4	2

Line	Flow	Capacity
a	960	2200
b	1250	2000
c	1100	2000

Poligon Veriler

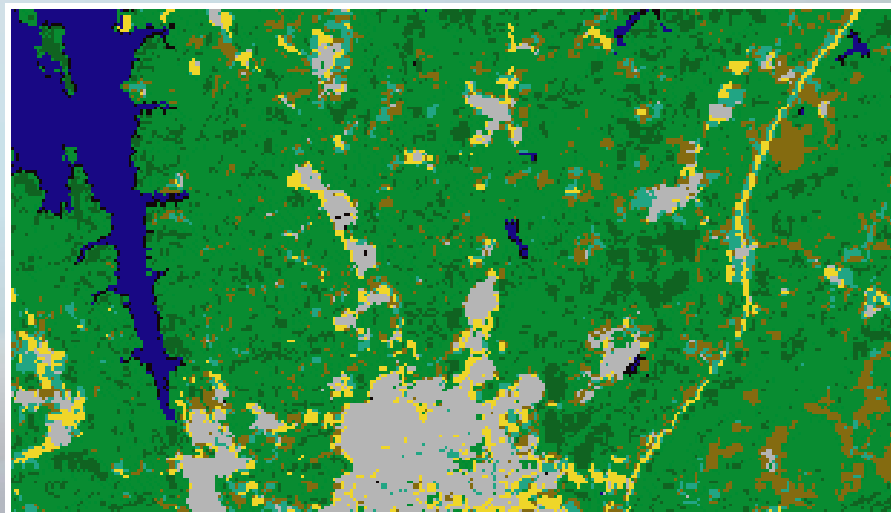
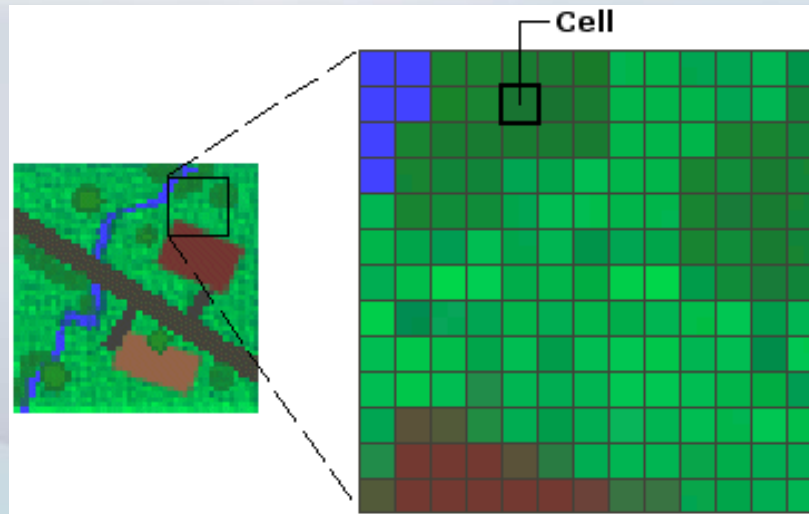


Node No	X	Y
1	7	6
2	1	4
3	5	4
4	4	1

Polygon	Node sequence
A	1,3,4,2,1

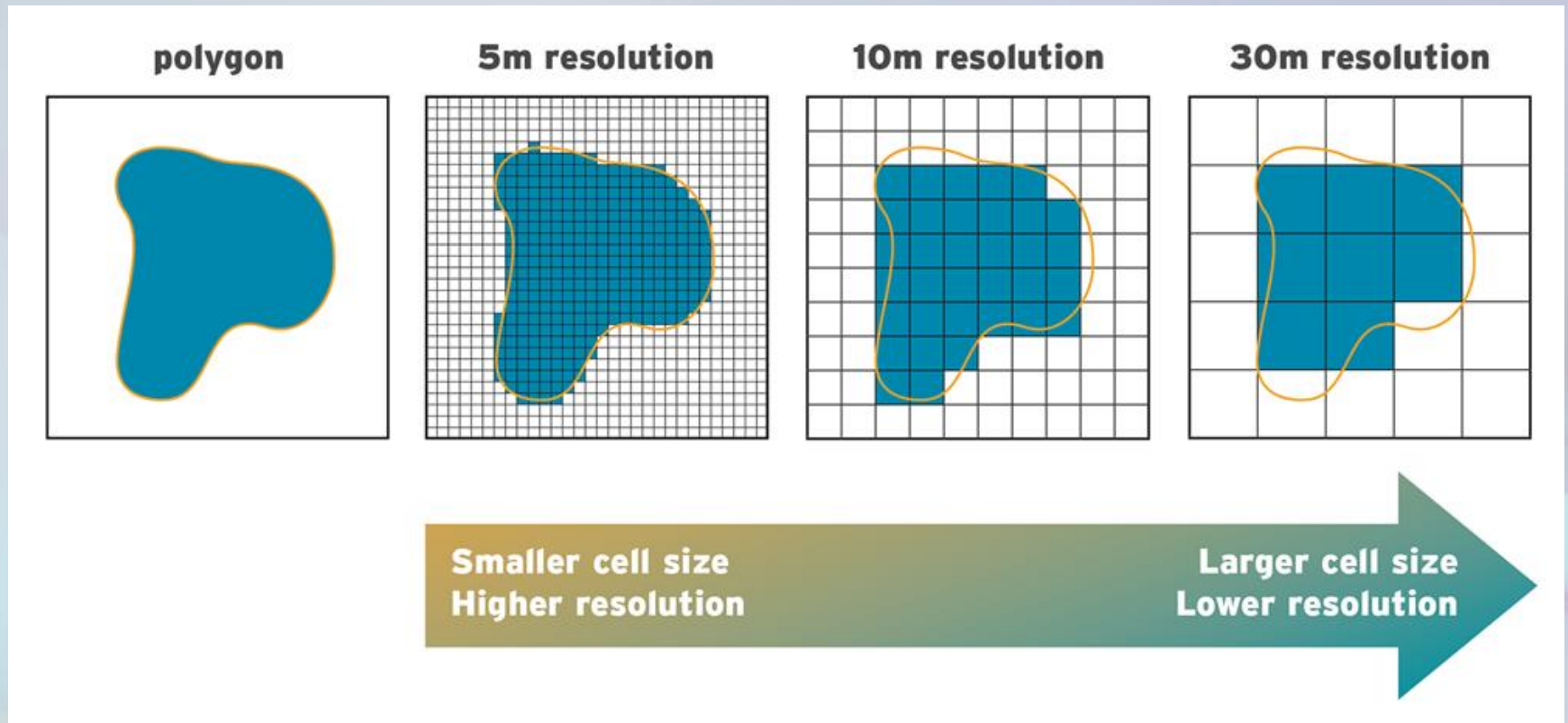
Polygon	Area	Population
A	15.23	12.35

Raster Veriler



- | | |
|--|---|
|  Agriculture |  Grass |
|  Bare ground |  Pine |
|  Water |  Shadow |
|  Deciduous |  Urban/Developed |
|  Deciduous/
Pine mixed | |

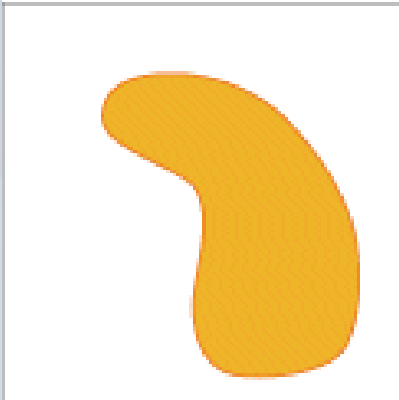
Raster Verilerin Çözünürlüğü



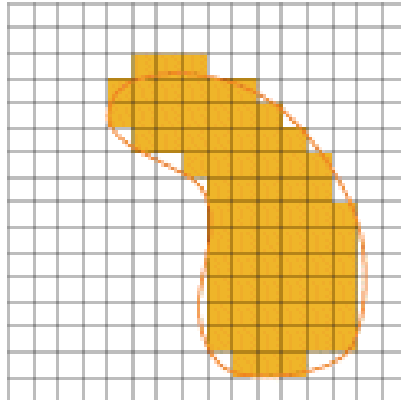
<https://www.jbarisk.com/news-blogs/dem-spatial-resolution-what-does-this-mean-for-flood-modellers/>

Raster Verilerin Çözünürlüğü

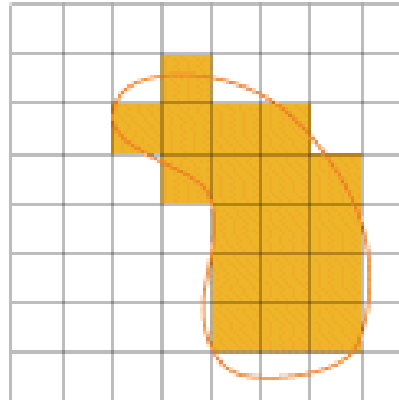
71 m²
polygon



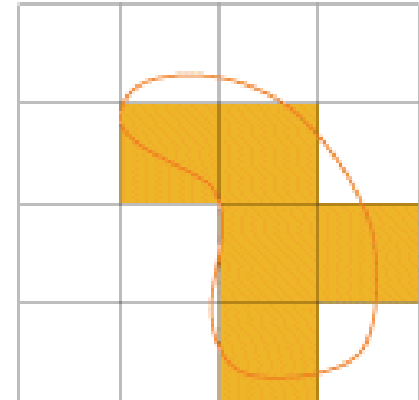
73 m²
1 m cell
16 x 16 cells



72 m²
2 m cell
8 x 8 cells



80 m²
4 m cell
4 x 4 cells



- Smaller cell size
- Higher resolution
- Higher feature spatial accuracy
- Slower display
- Slower processing
- Larger file size

- Larger cell size
- Lower resolution
- Lower feature spatial accuracy
- Faster display
- Faster processing
- Smaller file size

Karışık Hücre Problemi



Water dominates

W	W	G
W	W	G
W	W	G

Winner takes all

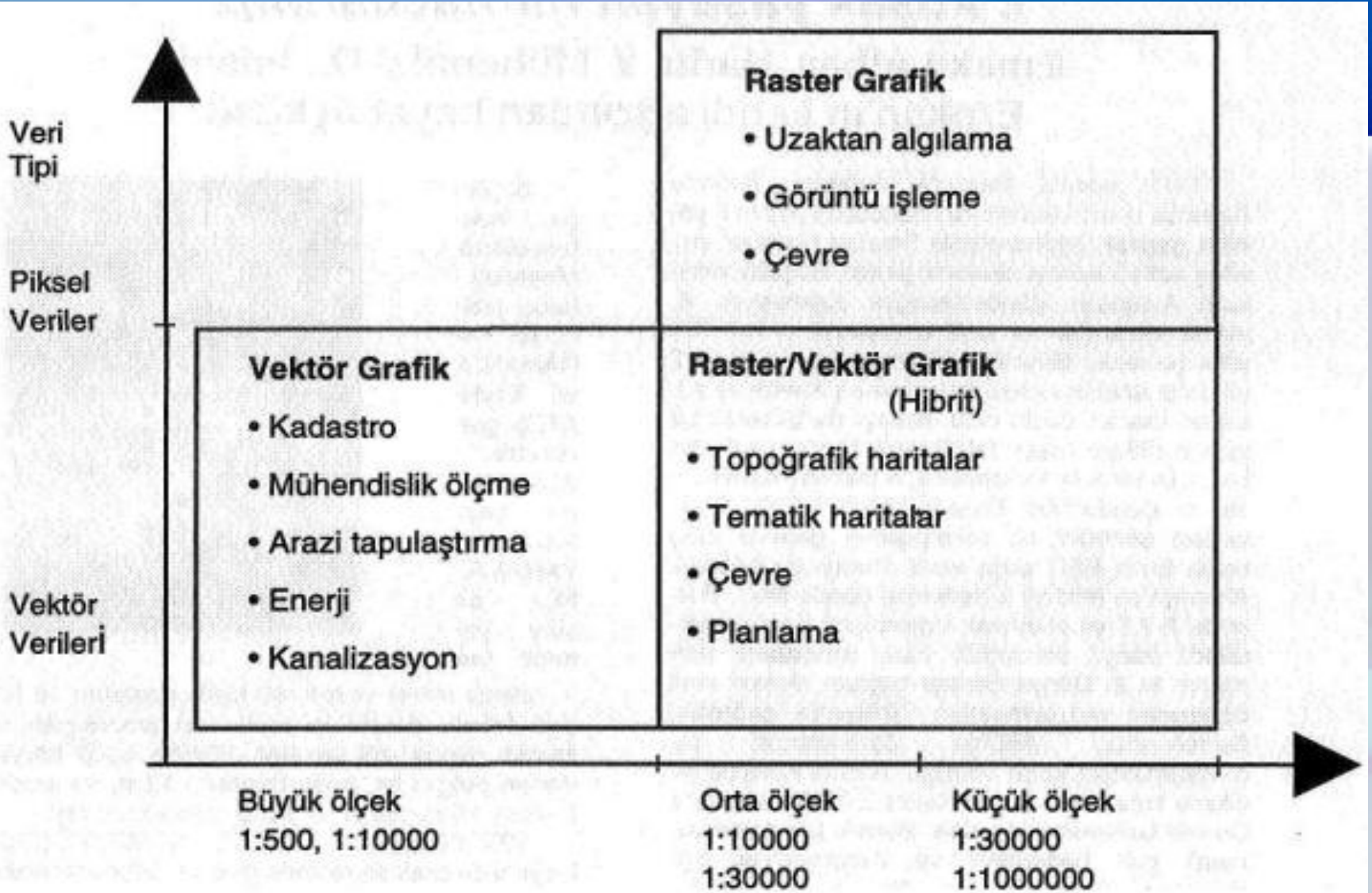
W	G	G
W	W	G
W	G	G

Edges separate

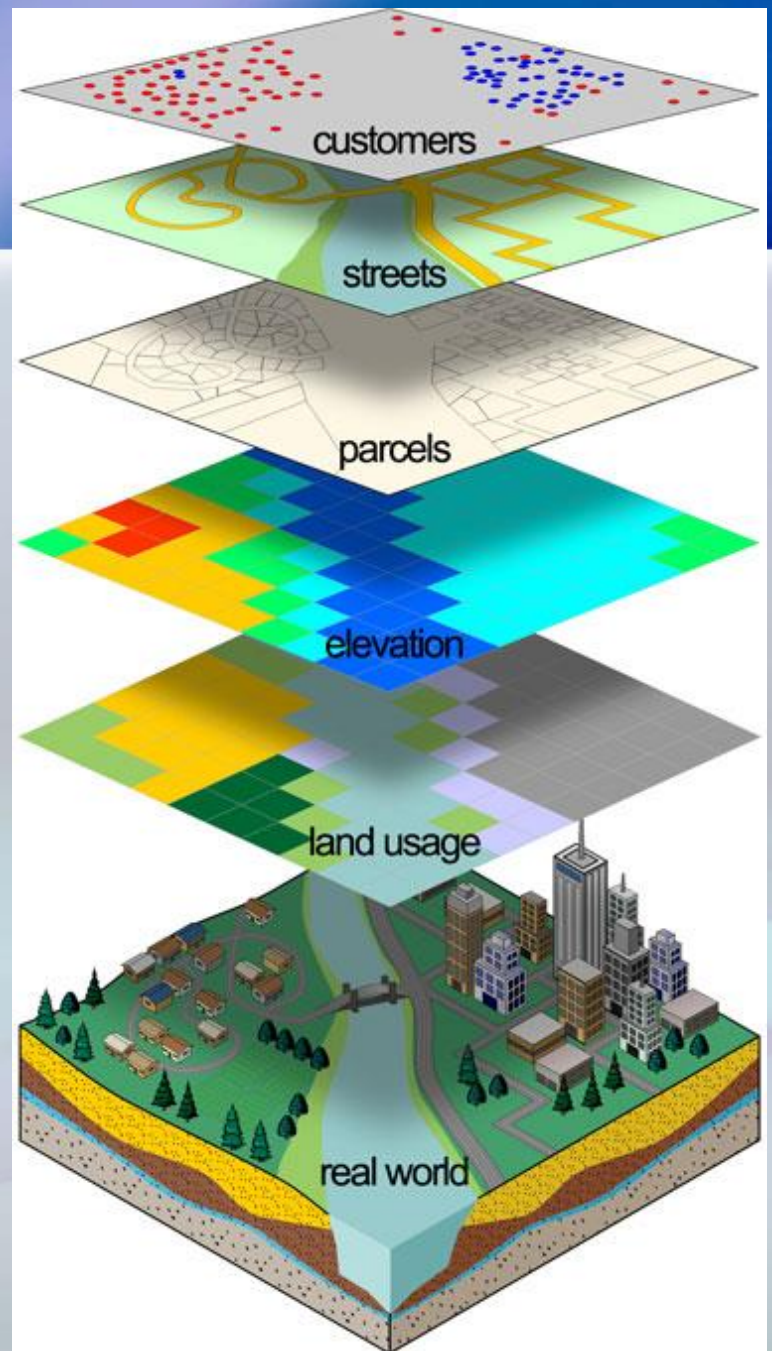
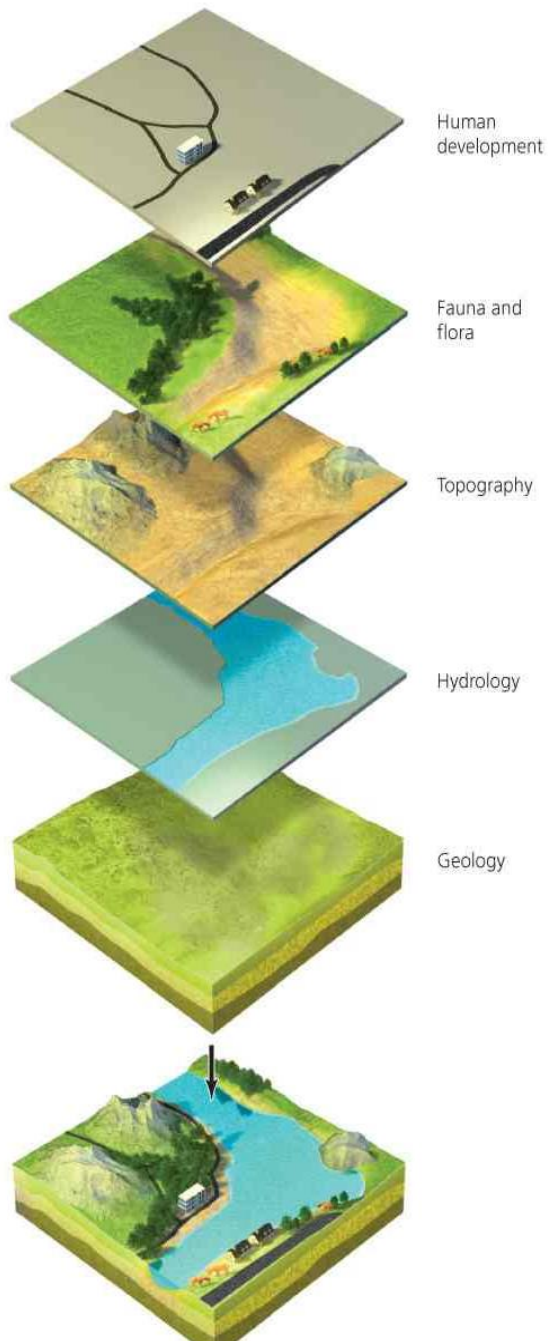
W	E	G
W	E	G
E	E	G

Dönüşümler

- Vektörel veriler kolaylıkla raster veriye dönüştürülür.
- Raster verileri vektörel veriye dönüştürmek çok çok zordur!



Şekil 6: Grafikverilerin CBS'de kullanım alanları [2]



Kaynaklar

- ALKIŞ, Z., Coğrafi Bilgi Sistemi Bileşenleri, www.hkmo.org.tr/resimler/ekler/KOTM_588e674d3f0faf9_ek.pdf
- Teknomo, Kardi. Introduction to GIS. <http://people.revoledu.com/kardi/tutorial/GIS/>