

Raqamlashtirish

Digitization

Оцифровка

Maruzachi: Nozimov D

1. Raqamlashtirish (Digitization) Nima?

Raqamlashtirish – analog ma'lumotlarni raqamli formatga o'tkazish jarayoni.

Geografik axborot tizimlarida (GIS) bu jarayon xaritalash, monitoring va tahlil qilish uchun ishlatiladi.

Sun'iy yo'ldosh tasvirlari va aerofotosuratlar yordamida muayyan hududlarning aniq ma'lumotlari olinadi.

Ushbu jarayon turli sohalarda, jumladan, qishloq xo'jaligi, ekologiya, suv resurslarini boshqarish va shaharsozlikda muhim ahamiyatga ega.

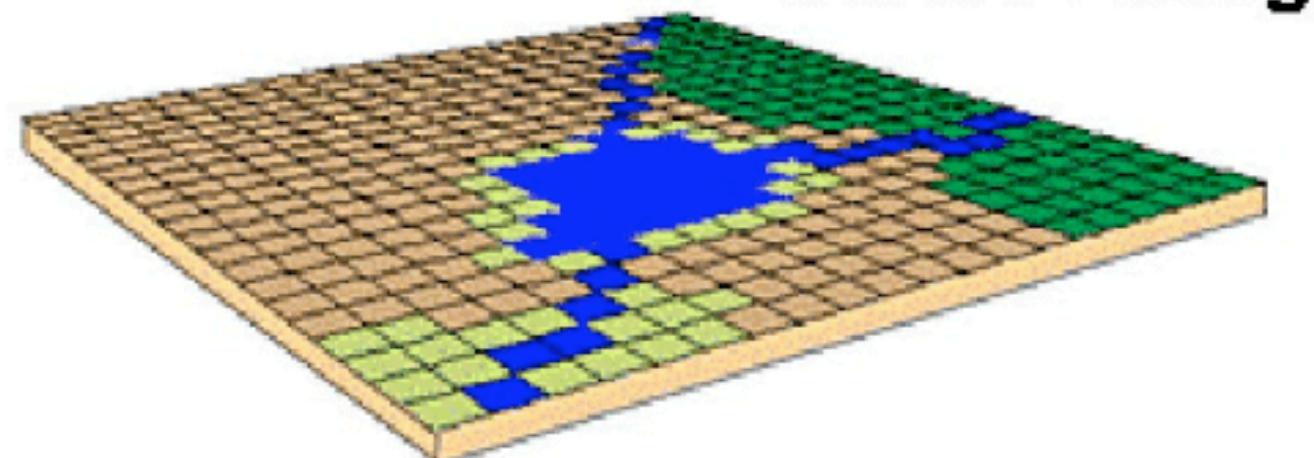
2. Raster va Vektor Ma'lumotlarning Farqi

Raster ma'lumotlar – tasvir shaklida bo'lib, piksellardan tashkil topadi. Sun'iy yo'ldosh tasvirlari va dron suratlari ushbu toifaga kiradi.

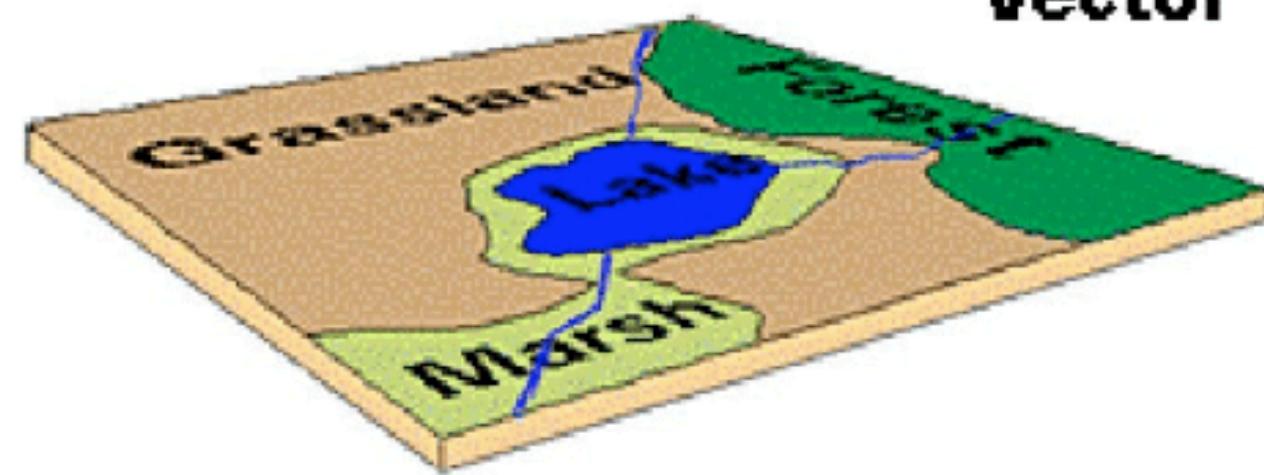
Vektor ma'lumotlar – nuqta, chiziq va polygon (ko'pburchak) shakllaridan iborat. Raqamlashtirish natijasida hosil bo'lgan yo'llar, maydonlar va inshootlar vektor shaklida saqlanadi.

Raster ma'lumotlar doimiy ravishda o'lchashlar uchun ishlatilsa, vektor ma'lumotlar esa aniq chegaralar va ob'ektlarni tasvirlash uchun qo'llaniladi.

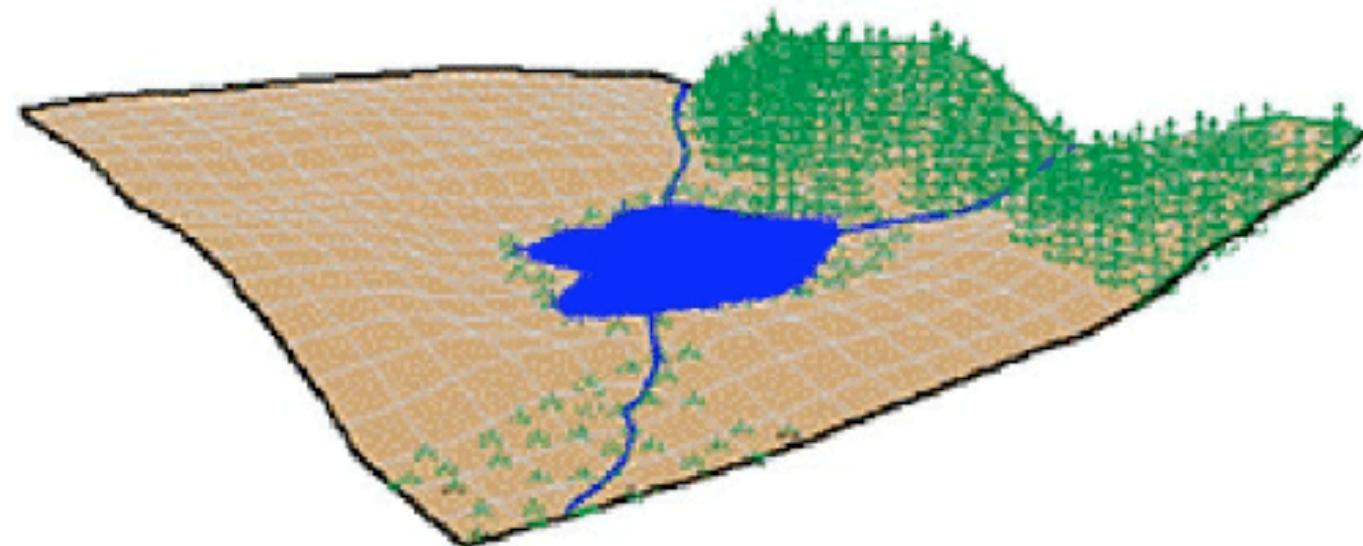
Raster / Image



Vector



Real World



urban area

raster data

river

vector data

Figure 5. Raster and Vector data types as representative of 'real...'

Download scientific diagram | Raster and Vector data types as representative of 'real world' geographic...

R[®] ResearchGate

3.3.3 The raster and vector data

Write an awesome description.

cartong.org

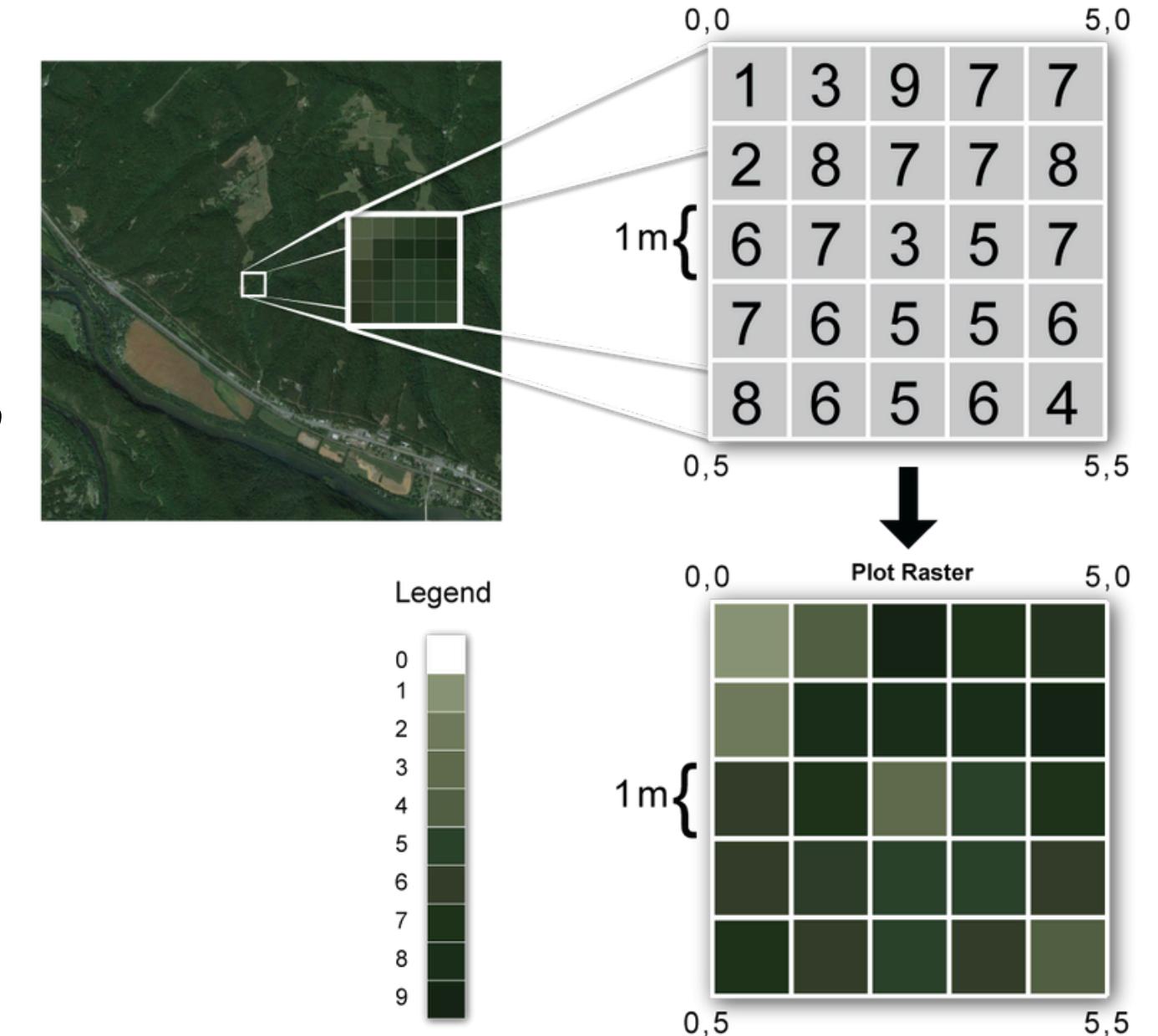
3. Sun'iy Yo'l dosh Tasvirlari Yordamida Raqamlashtirish

Sun'iy yo'l dosh tasvirlari yordamida yer yuzasidagi obyektlar xaritalashtiriladi.

Tasvirlarni tahlil qilish orqali ekin maydonlari, yo'llar, suv havzalari va boshqa obyektlar aniqlanadi.

Optik va radar tasvirlar yordamida aniq va tezkor raqamlashtirish amalga oshiriladi.

Landsat, Sentinel, WorldView kabi sun'iy yo'l dosh tasvirlari bu jarayonda keng qo'llaniladi.



Spatial Data Raster · Data Carpentry for Biologists

For spatial data we're going to put the data in the geom calls instead of ggplot() because we are ofte...

github.io

neon

4. Raqamlashtirish Turlari

Qo'lda raqamlashtirish (Manual Digitization)

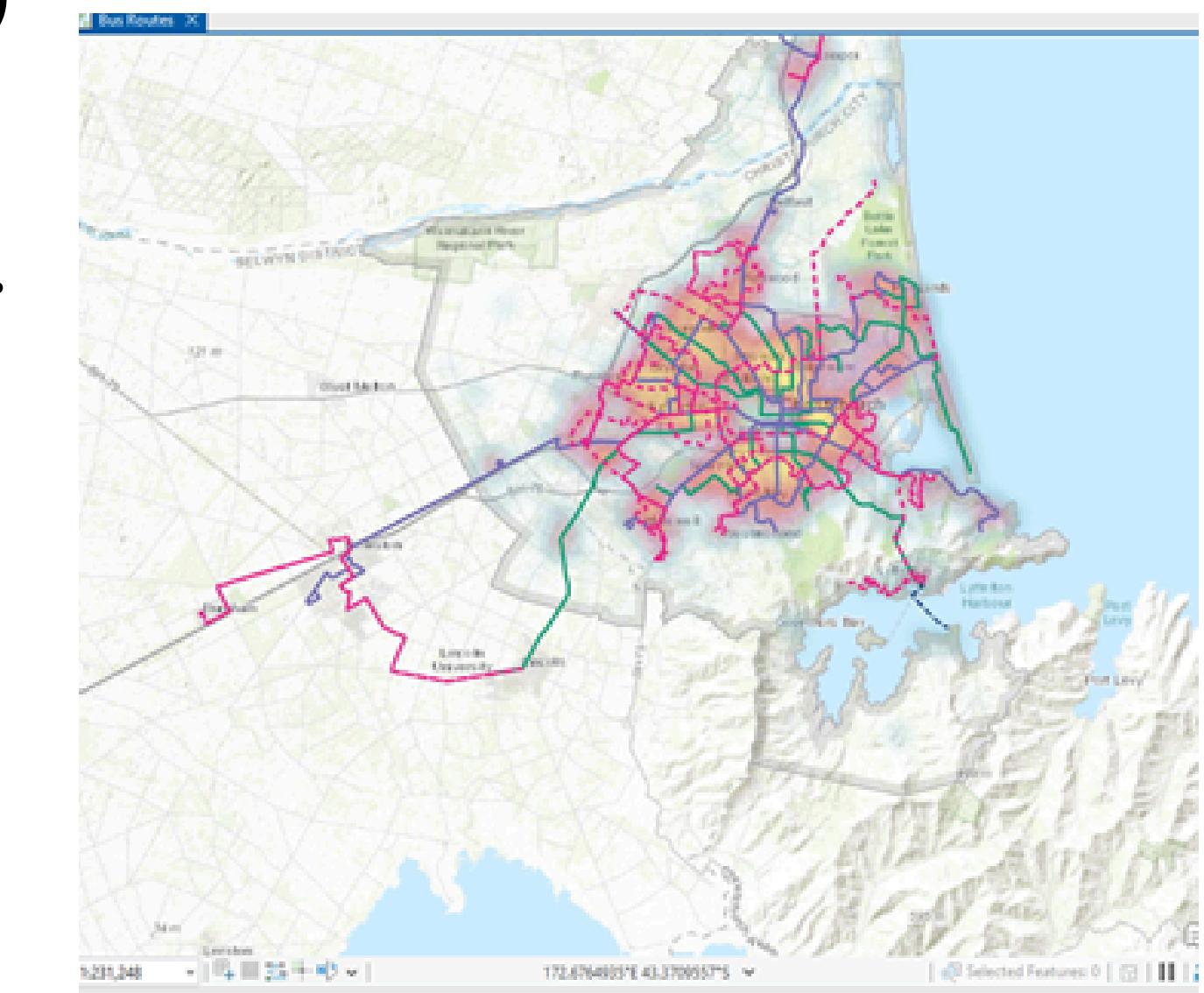
GIS dasturlarida obyektlarni qo'lda chizish.

Dalalar, yo'llar va inshootlarni aniq belgilash.

Avtomatik raqamlashtirish (Automatic Digitization)

AI va Machine Learning algoritmlari yordamida tasvirlarni tahlil qilish.

Ekin turlarini ajratish, o'rmonlarni monitoring qilish.



[https://www.google.com/url?
sa=i&url=https%3A%2F%2Fpro.arcgis.com%2Fen%2Fprofessional%2Flatest%2Fget-started%2Fget-started.htm&psig=AOvVaw1Yn9tN5p9Y99nMYdArG7jb&ust=1741005189326000&source=images&cd=vfe&opi=89978449&ved=0CBcQjhxqEwoTCKC25vGz64sDFQAAAAAdAAAAABAY](https://www.google.com/url?sa=i&url=https%3A%2F%2Fpro.arcgis.com%2Fen%2Fprofessional%2Flatest%2Fget-started%2Fget-started.htm&psig=AOvVaw1Yn9tN5p9Y99nMYdArG7jb&ust=1741005189326000&source=images&cd=vfe&opi=89978449&ved=0CBcQjhxqEwoTCKC25vGz64sDFQAAAAAdAAAAABAY)

5. Qaysi Yo'nalishlarda Qo'llaniladi?

Qishloq xo'jaligi – ekin maydonlarini xaritalash, hosildorlikni baholash.

Suv xo'jaligi – daryolar, suv omborlari va sug'orish tizimlarini raqamlashtirish.

O'rmon xo'jaligi – daraxt turlarini aniqlash va o'rmon maydonlarini monitoring qilish.

Kadastr va geologiya – yer uchastkalari va geologik tuzilmalarning xaritalari.

Ekologiya – chiqindilar monitoringi, tabiiy resurslarni nazorat qilish.

Urbanizatsiya va infratuzilma – shaharlarni rejolashtirish va infratuzilmani kuzatish.

6. Raqamlashtirish Uchun Asosiy Dasturlar

ArcGIS Pro – Professional GIS tizimi, katta miqdordagi geoma'lumotlarni qayta ishlash imkonini beradi.



QGIS – Bepul va ochiq manbali dastur, kichik va o'rta loyihalar uchun juda qulay.



Google Earth Engine – Sun'iy yo'ldosh tasvirlarini bulut orgiali tahlil qilish va dinamik monitoring qilish uchun ishlatiladi.



ENVI va Erdas Imagine – Rastr tasvirlar bilan ishlash, spektral tahlillar uchun keng qo'llaniladi.



QGIS Desktop

QGIS is a professional GIS application and developer platform. QGIS is built on top of and proud to be itself Free and Open Source Software.

© OSGeo /

Tushuntirish (qisqa xulosa)

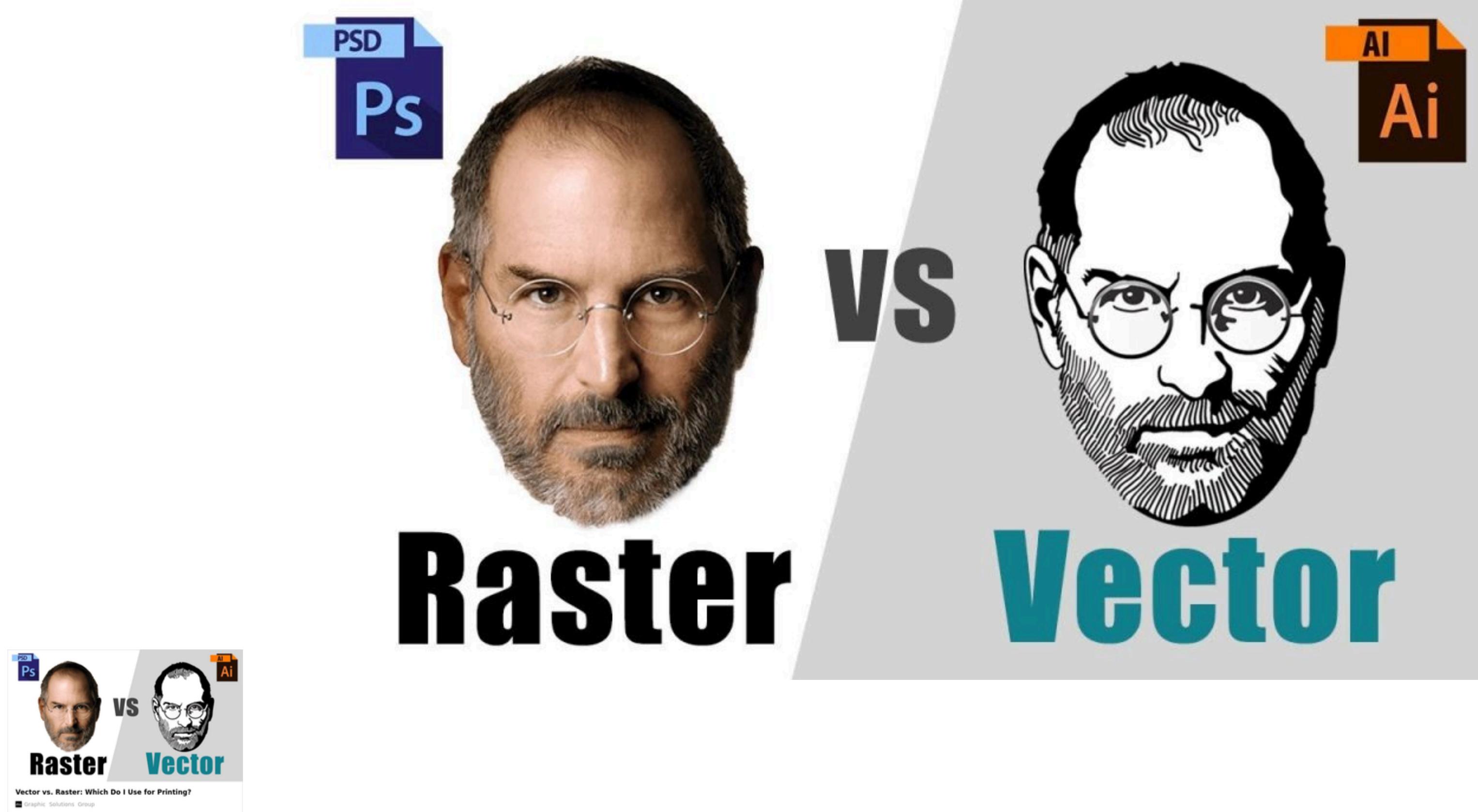


9,097 Before After Makeup Royalty-Free Images, Stock Photos & Pictures

Find Before After Makeup stock images in HD and millions of other royalty-free stock photos, illustrations and vectors in the Shutterstock collection. Thousands of new, high-quality pictures added every day.

Shutterstock

Tushuntirish (qisqa xulosa)



Tushuntirish (qisqa xulosa)

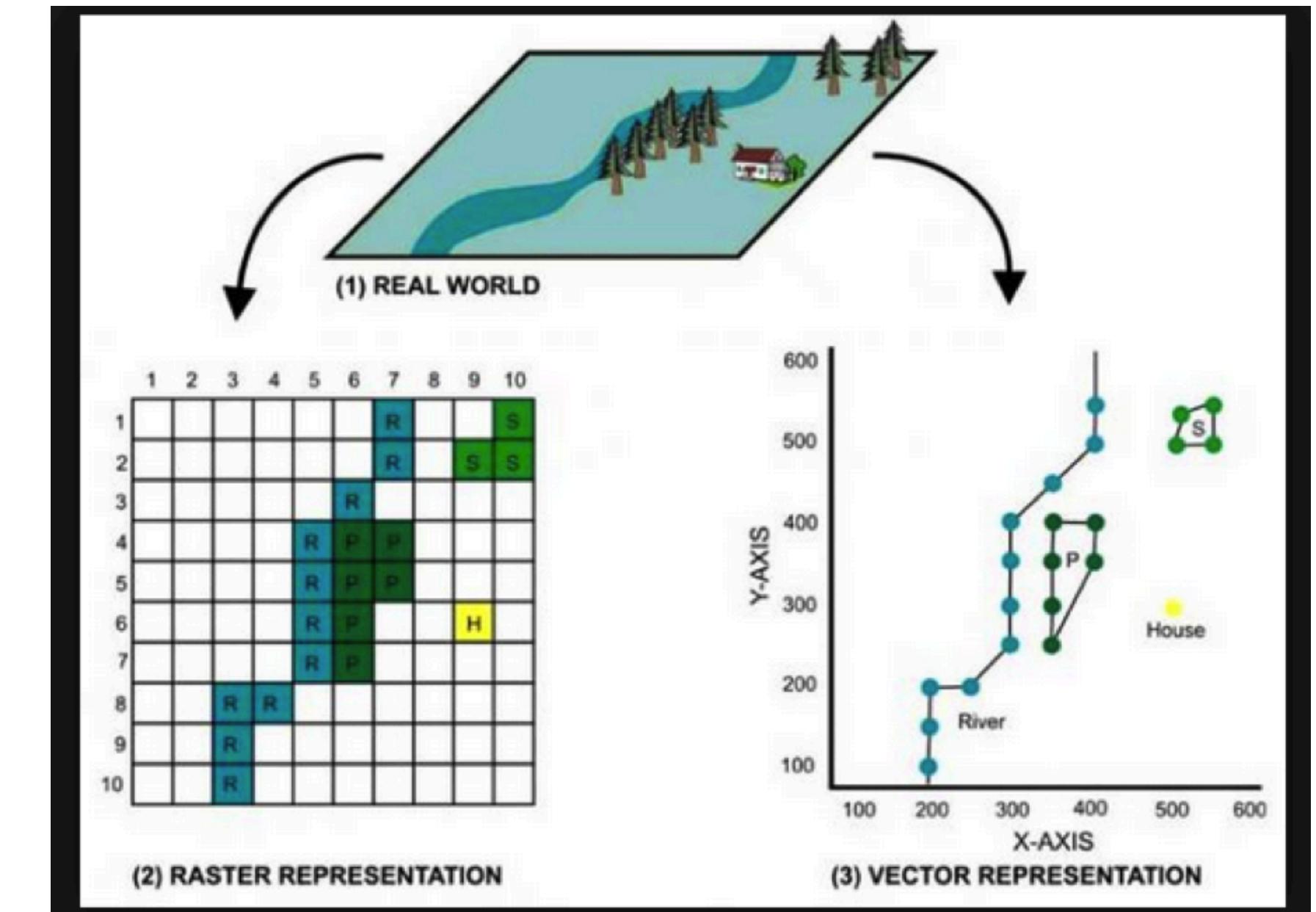
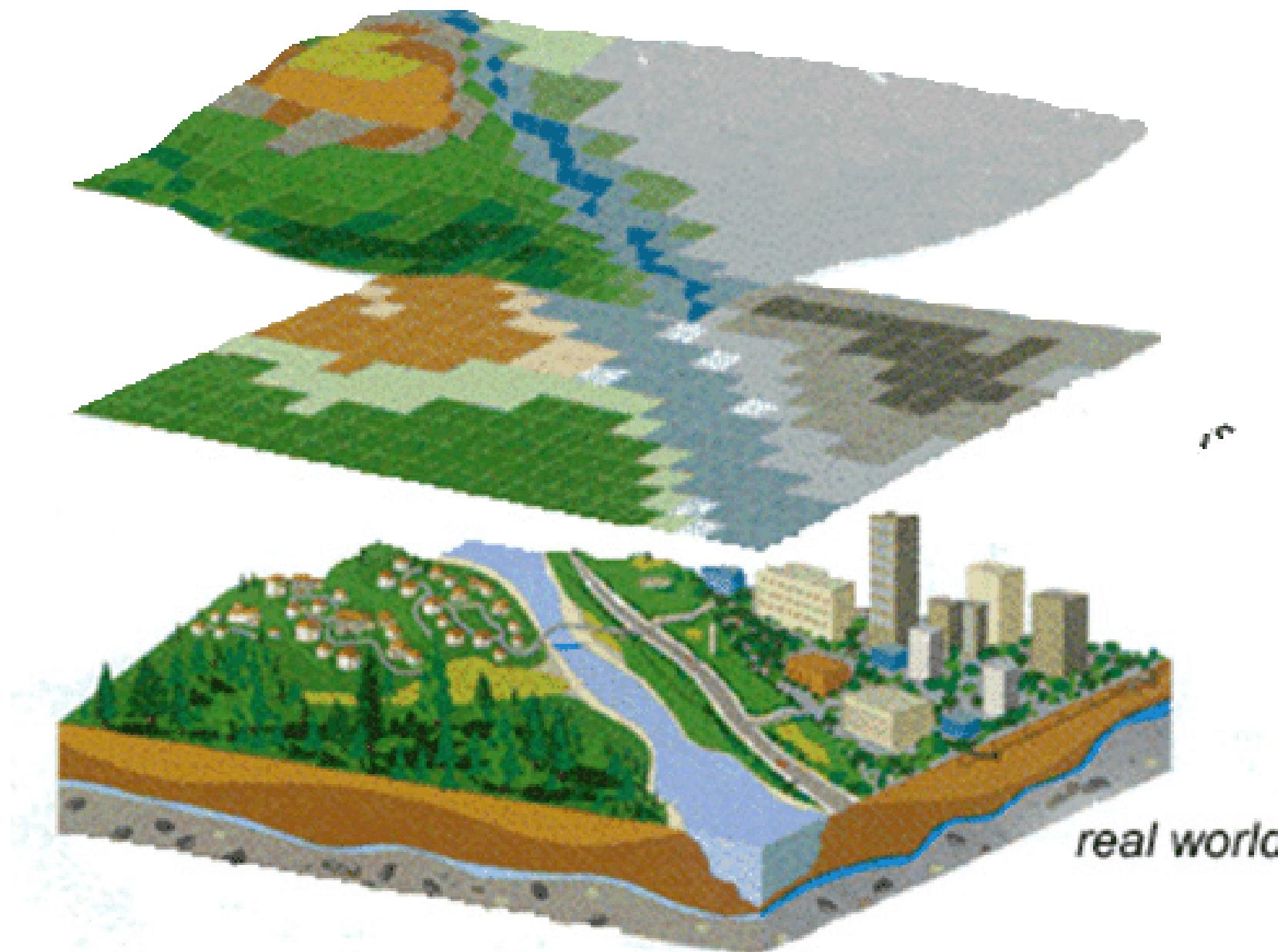


Figure 2.1: Raster model (a) and Vector model (b) of GIS data [Chr01].

Download scientific diagram | 1: Raster model (a) and Vector model (b) of GIS data [Chr01].

© ResearchGate



What are Raster and Vector data in GIS and when to use?

What are raster and vector data in the GIS context? In general terms what applications, processes, or...

Geographic Information Systems Stack Exchange

Raqamlashtirish jarayonini oddiy va qiziqarli misol orqali tushuntirish mumkin. Buni ayollarning pardoz-andoz jarayoni yoki rassomning san'at asari yaratishi bilan taqqoslash mumkin.

Ayollar pardoz qilishda ikki asosiy elementdan foydalanadi:

Yuz – bu tabiiy fon, ya’ni raster ma'lumot. Bu o‘zgarmas, aniqligi piksellarga bog‘liq va tabiiy ko‘rinishga ega.

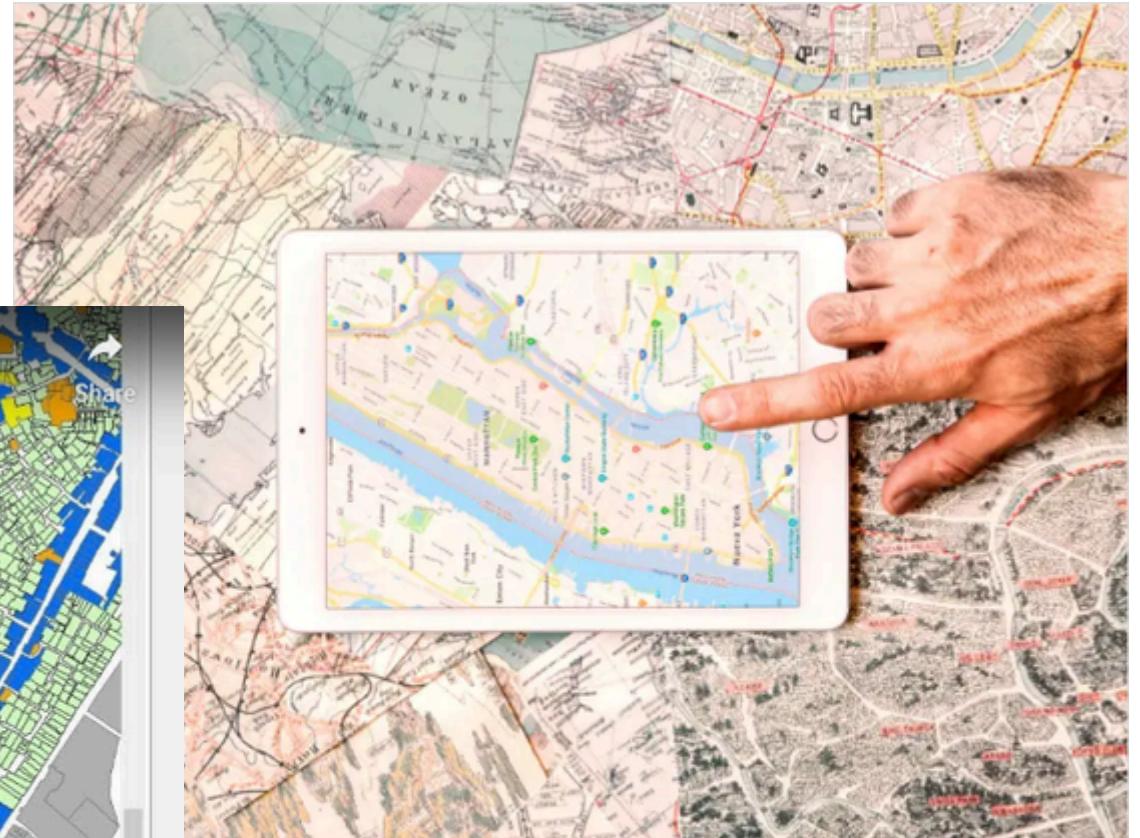
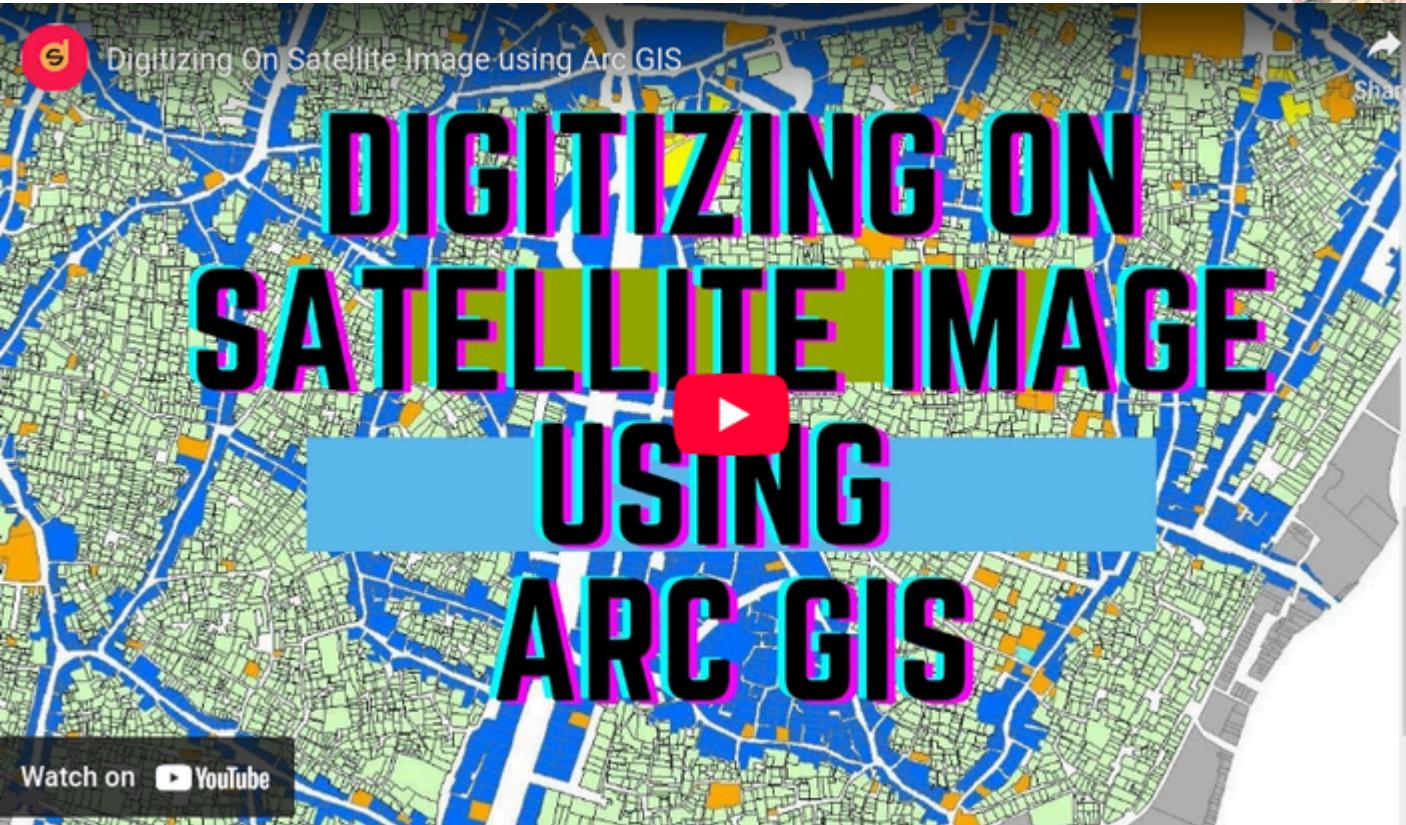
Pardoz anjomlari (makiyaj) – bu vektor ma'lumotlar kabi bo‘lib, aniq chiziqlar va shakllarni hosil qiladi. Masalan, qalam, lab bo‘yog‘i, tush – bular GIS dasturlaridagi Line, Point, Polygon vositalariga o‘xshaydi.

Ayollar yuzlariga pardoz qilishsa, biz raster ustiga vektor ma'lumotlarini chizib, xarita yoki geoma'lumotlar yaratamiz.

Natijada, pardoz qilingan yuz qanday yanada chiroyli va aniq bo‘lsa, raqamlashtirilgan xarita ham shunday vizual va informatsion jihatdan boy bo‘ladi.

Xuddi rassom o‘z san’at asarini yaratganidek, biz ham GIS dasturida raqamlashtirish orqali geografik obyektlarni chizamiz va aniq ko‘rinish hosil qilamiz.

[https://www.google.com/search?
q=digitalization+satellite+image&oq=digit&gs_l=psy-ab.35.0.0.0.WUqBggBEEUYOzIGCAAQRRg5MgYIARBFCYjwlyBwgDEAAjYjwlyBwgEEAAYjwlyBggFEEURg8MgYIBxBFGD3SAQgzMDY5ajBqNKgCALd=chrome&ie=UTF-8](https://www.google.com/search?q=digitalization+satellite+image&oq=digit&gs_l=psy-ab.35.0.0.0.WUqBggBEEUYOzIGCAAQRRg5MgYIARBFCYjwlyBwgDEAAjYjwlyBwgEEAAYjwlyBggFEEURg8MgYIBxBFGD3SAQgzMDY5ajBqNKgCALd=chrome&ie=UTF-8)



Process of GIS digitization (From Paper Maps to Data)

Digitization in GIS? Digitization is the process of converting geographic data into a digital format, which is essential for the functioning of Geographic Information Systems (GIS). This transformation...

<https://www.sciencedirect.com/science/article/pii/027311778903176>