

Full integration of geodata in GIS

**Core ideas of Socrates Erasmus
Summer School**

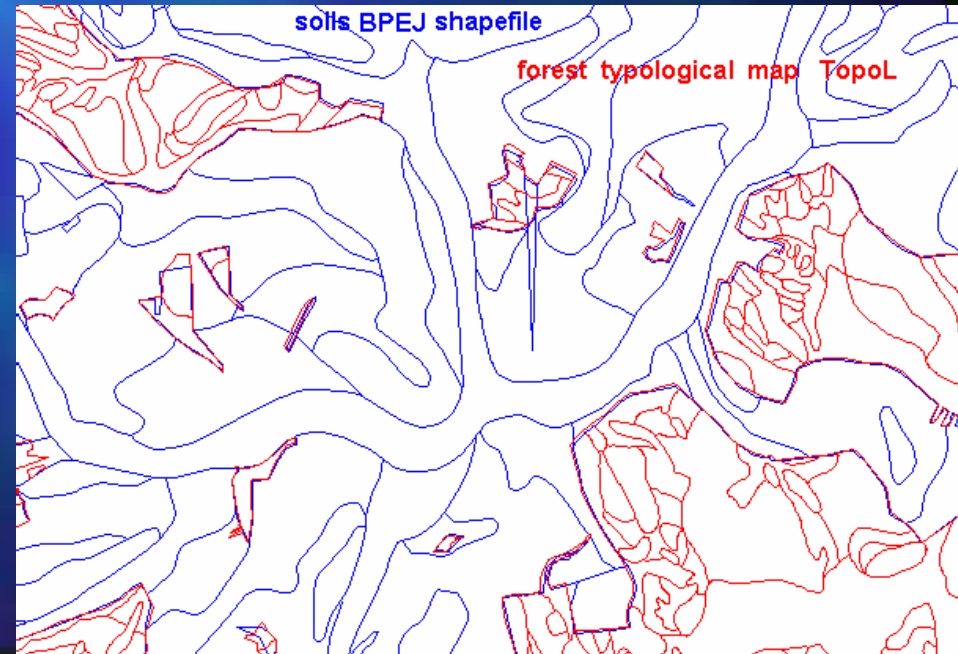
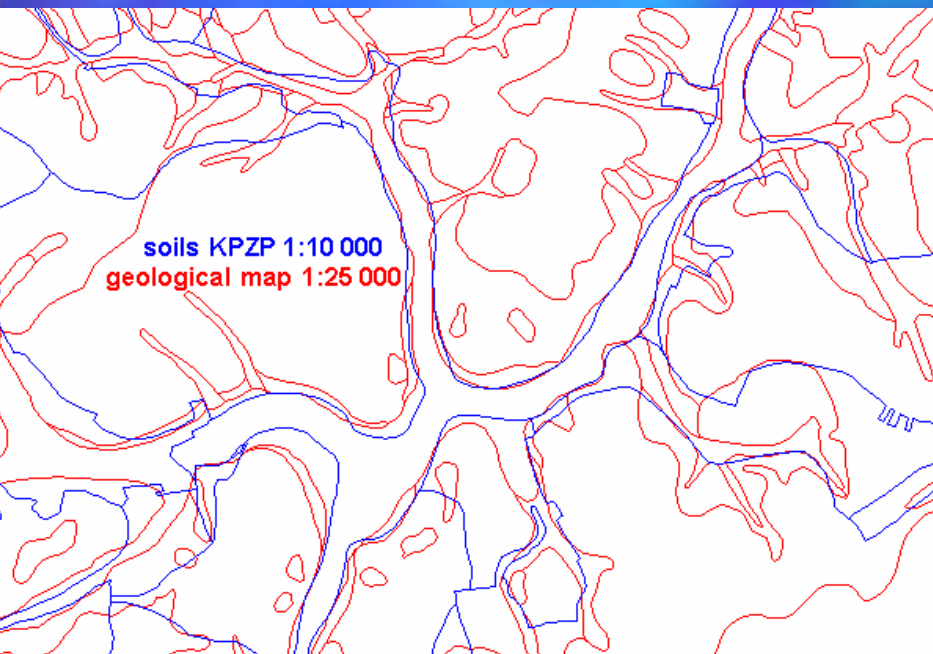
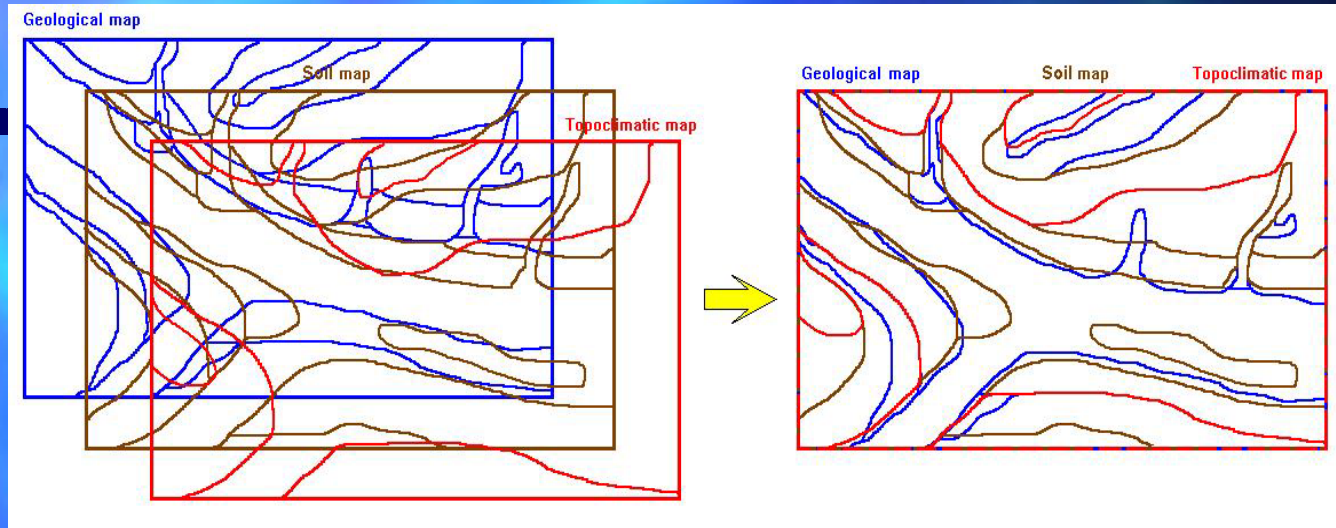
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Brno, 2006

Present situation in area of disposable geospatial data

- Distributed databases are managed separately with complex access.
- Different data formats, scales, projection etc. used for stored data.
- Extended analogue data sets archived and not used appropriately.

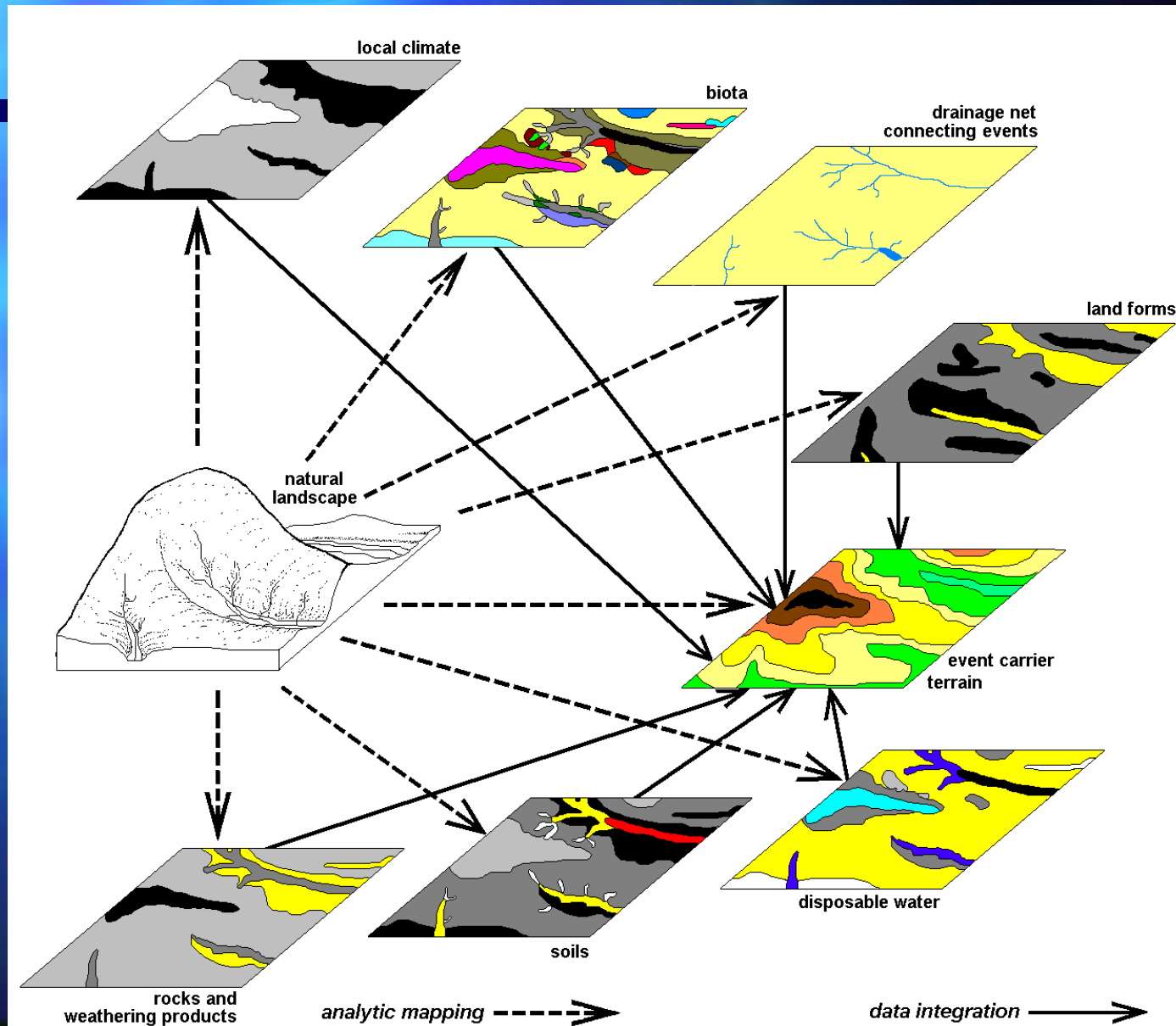
Present situation in area of disposable geospatial data



Present demand for data. Why is geospatial data useful?

- **To carry out spatial analyses using traditional and non-conventional methods.**
- **To apply external expert models to model various spatial processes.**
- **To develop own expert models and procedures for geospatial data processing.**

Data creation: analytic approach

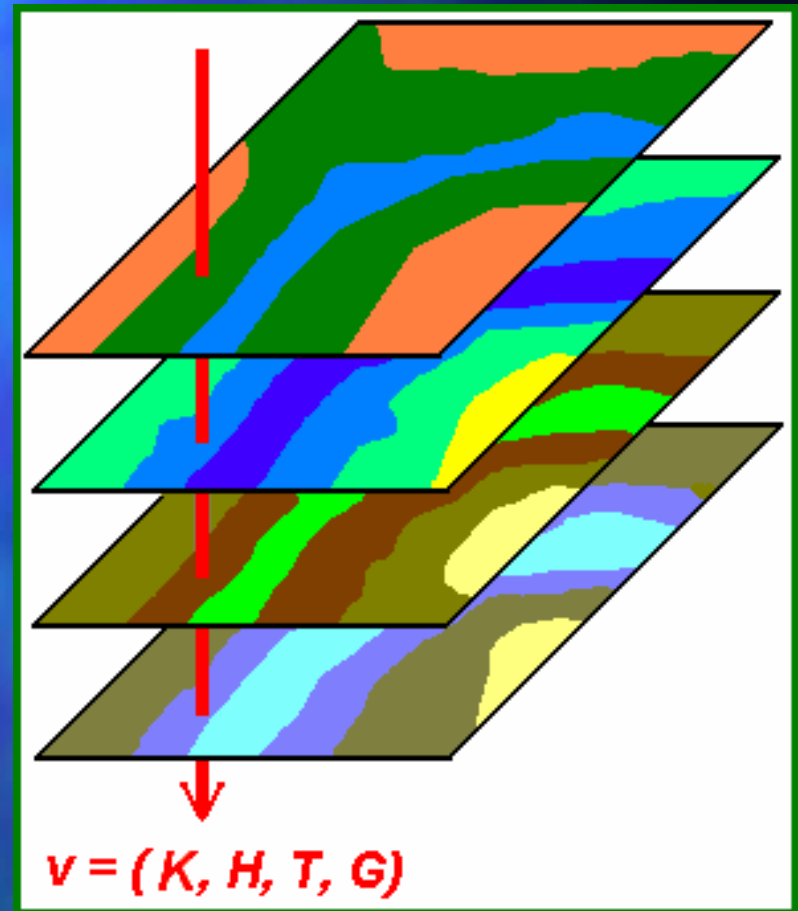


Data use:
synthetic
approach

Present demand for geospatial data.

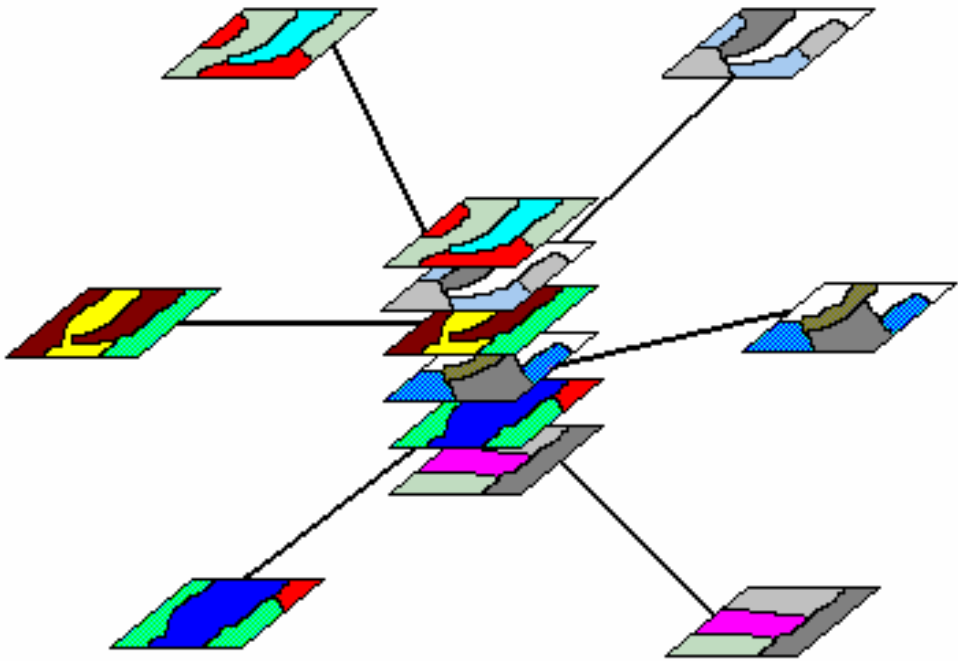
Idealistic view:

Using data overlay, e.g. data on the nature, logical and real combination of attributes is created as required data input into processing/modelling procedure.

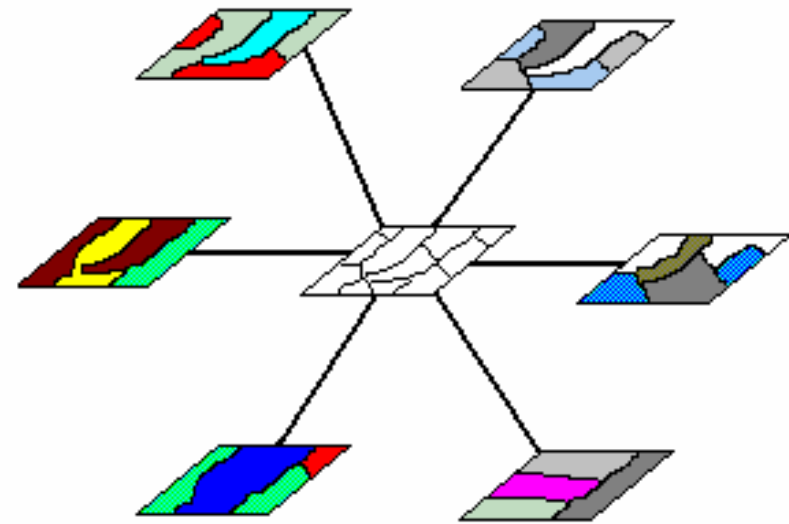


BUT!!!!!!! real situation is very different – a suitable solution is proposed by full geodata integration in the DIGITAL LANDSCAPE MODEL - DLM .

Integrated database compilation



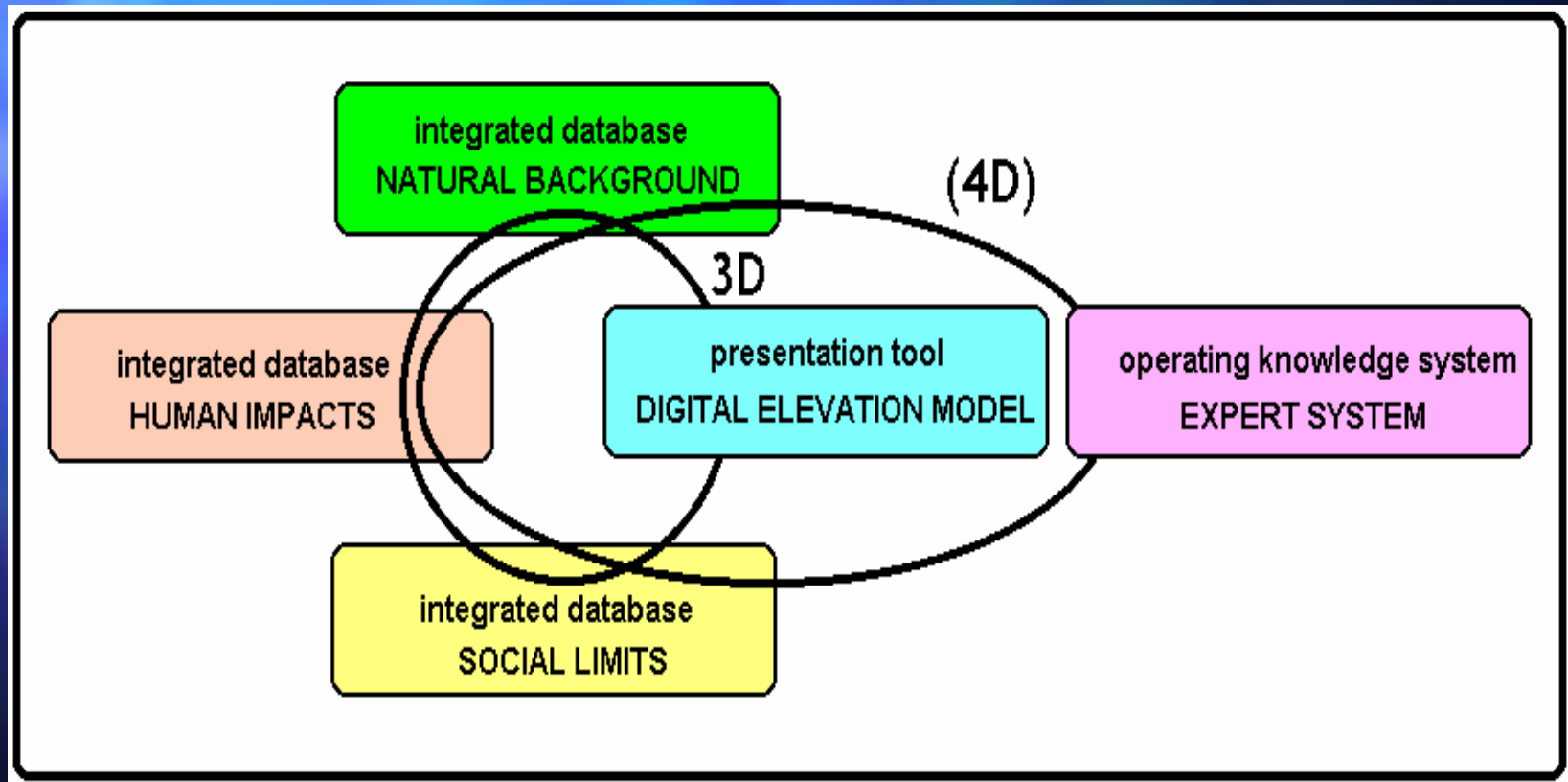
Traditional data base
compilation task: collect
data and put together



Geographic data base
compilation task: collect
and integrate data

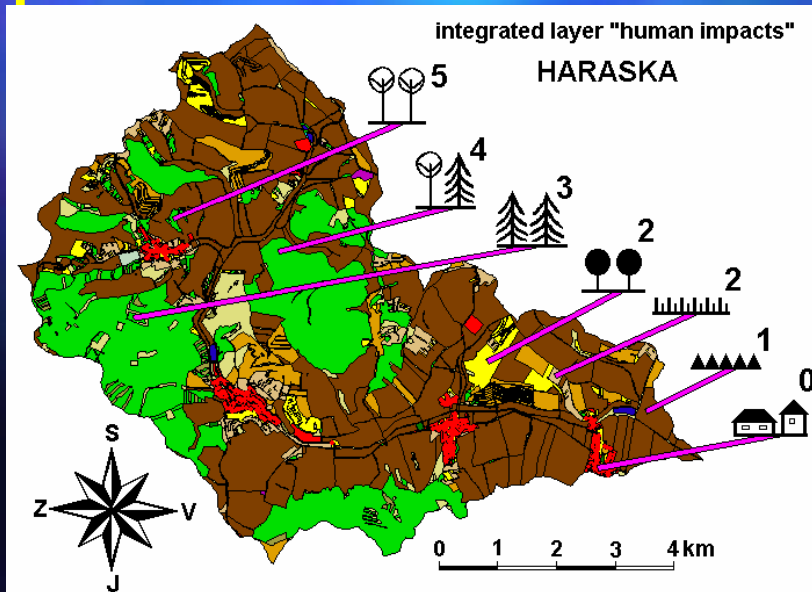
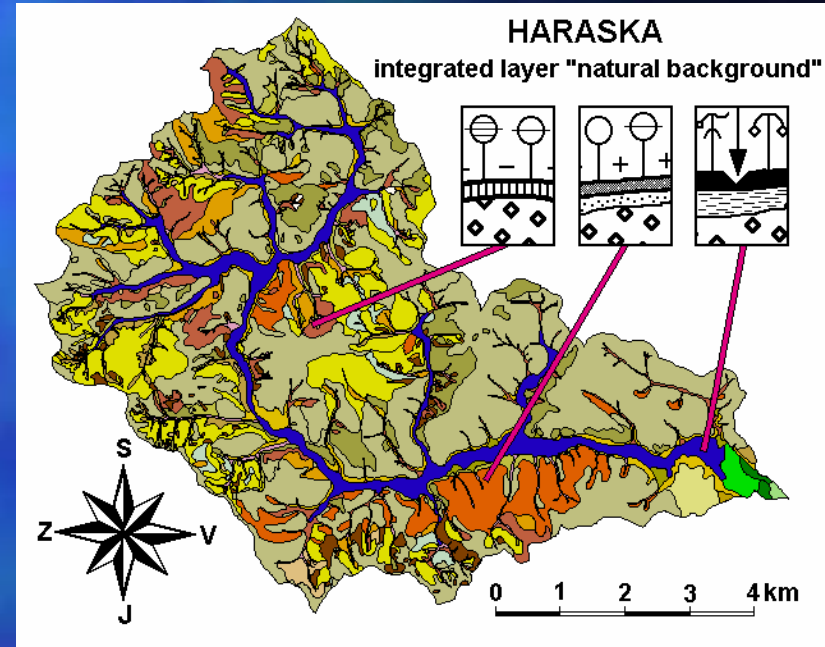
Integrated geospatial data base + GIS and/or expert package = DLM

What is the digital landscape model?



Types of geographic data layers in integrated data bases

1. NATURAL BACKGROUND (with homogenous natural landscape units as reference areas)
2. PRODUCTS OF HUMAN IMPACTS (with parcels and/or subparcels as reference areas)



3. HUMAN and SOCIAL INTERESTS (development limits in parcels and/or subparcels as reference units)
4. DIGITAL ELEVATION MODEL (carrying skeleton)

DLM construction methods

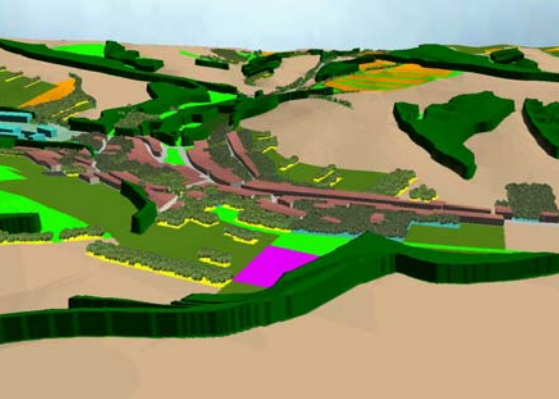
- **manual integration of analytic data layers in analogue form and consequent digitising,**
- **semiautomatic on-screen integration of digital analytic data layers,**
- **automatic integration of digital analytic data layers using clustering and classification techniques.**

DLM applications

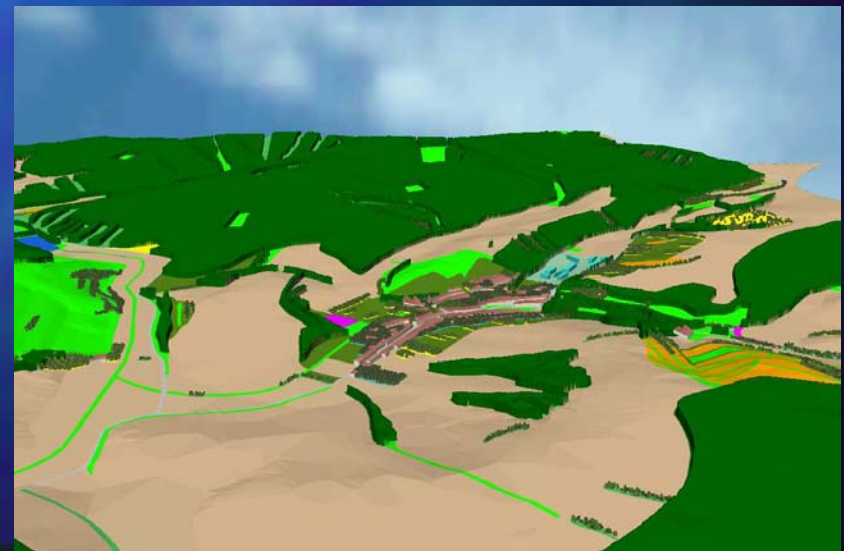
- **Soil loss modelling**
- **Risk assessment**
- **Run off modelling**
- **Area value assessment**
- **Land suitability assessment**
- **Landscape planning**
- **Landscape historical research**
- **and many others**

DLM for photorealistic geovisualising

VISUALISING



Static 3D visualising selected parts of data base and data processing results in various combinations.



DLM alternatives

- **Fuzzy mathematics**
- **Principal component analysis**
- **Classification techniques**