

László Kollányi

# **Sustainable development of landscapes using innovative participation and visualisation techniques**

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Vital Landscape Workshop  
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**VITAL  
LANDSCAPES**  
INTERREG IV B Project



**EUROPEAN UNION**  
EUROPEAN REGIONAL  
DEVELOPMENT FUND

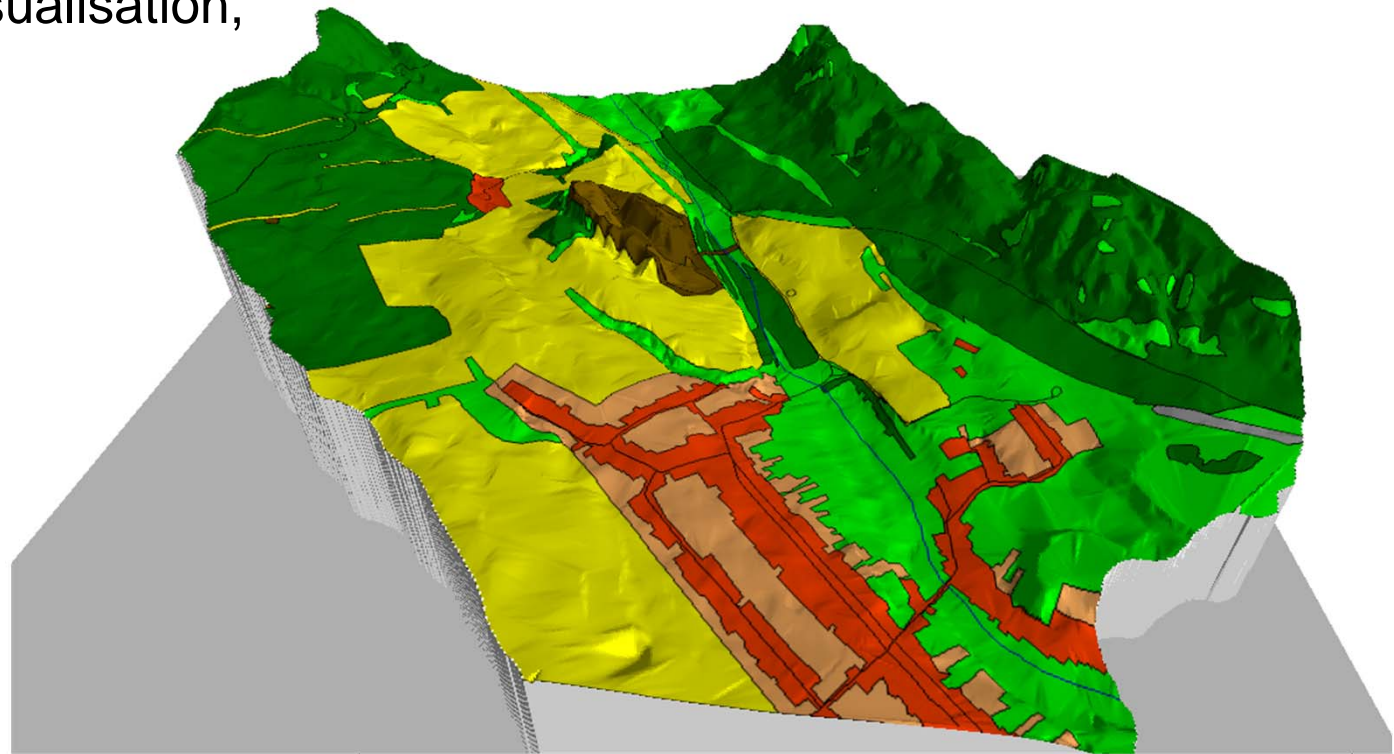
## „One image is worth thousand words” old Chinese proverb

The visualisation is an important tool in landscape planning (and especially in participation planning) to make it understand the planning concept.

80% of all of the data are stored in an information system can be linked to geographical coordinates, so can be visualised in a model.

Wide range of visualisation,  
always the goal  
defines the  
best solution.

From a simple  
DTM dataset  
easily can be created  
visually appearance  
3D models



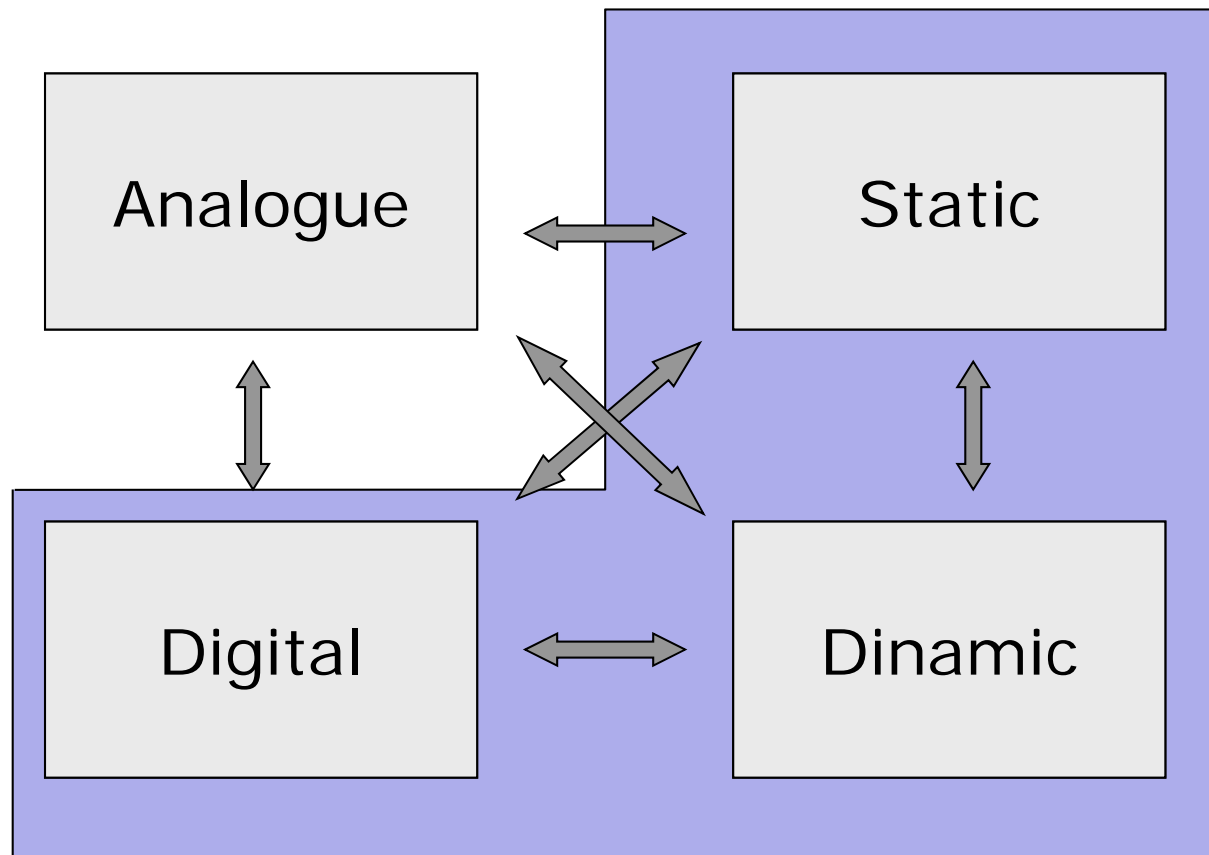
# How to classify of visual modells in landscape architecture?

A short typhology of modells:

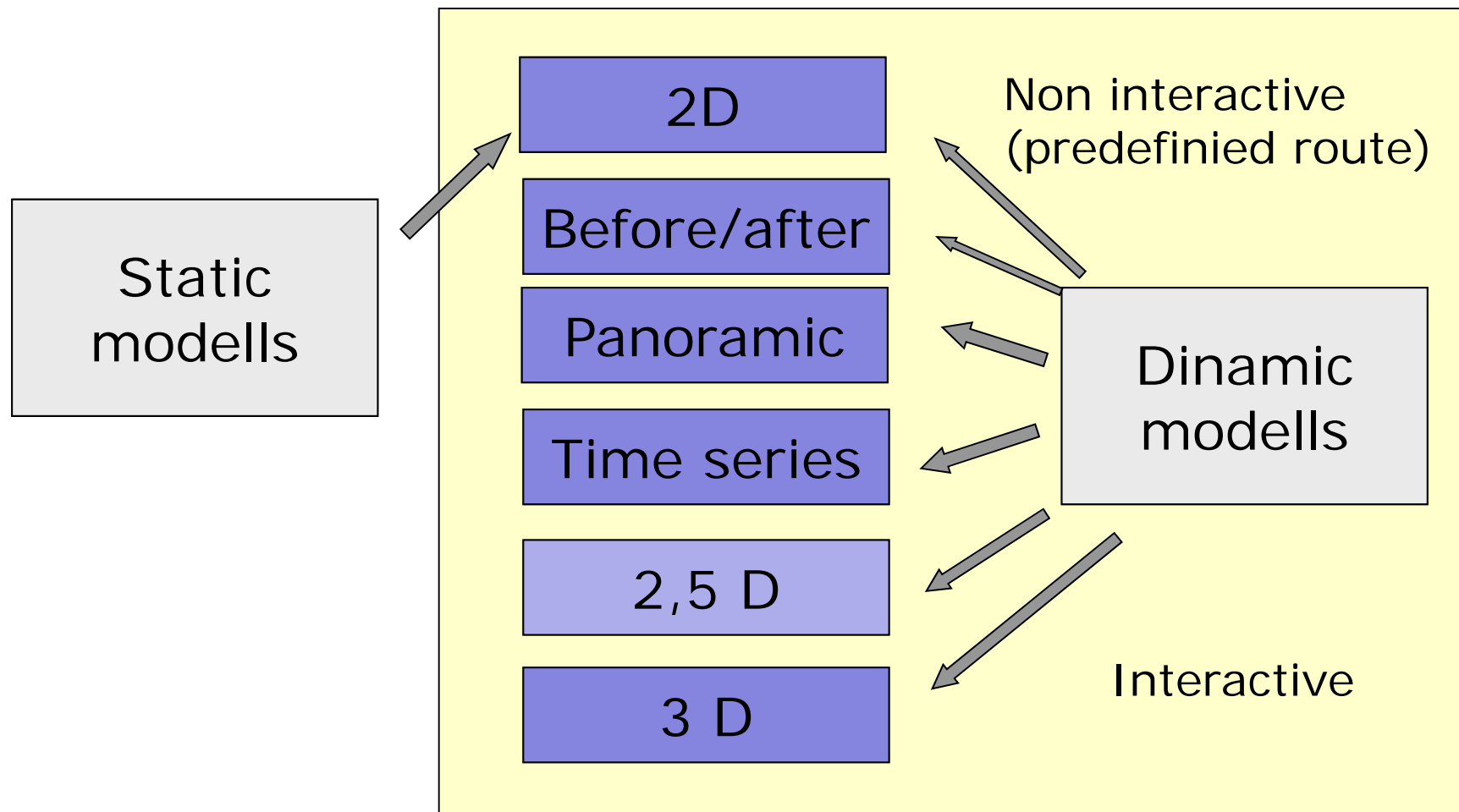
Analogues modells  
have an emotional  
content (landscape  
paintings, sketches)

Digital modells less  
subjectives

In the next we  
just dealing with  
digital modells

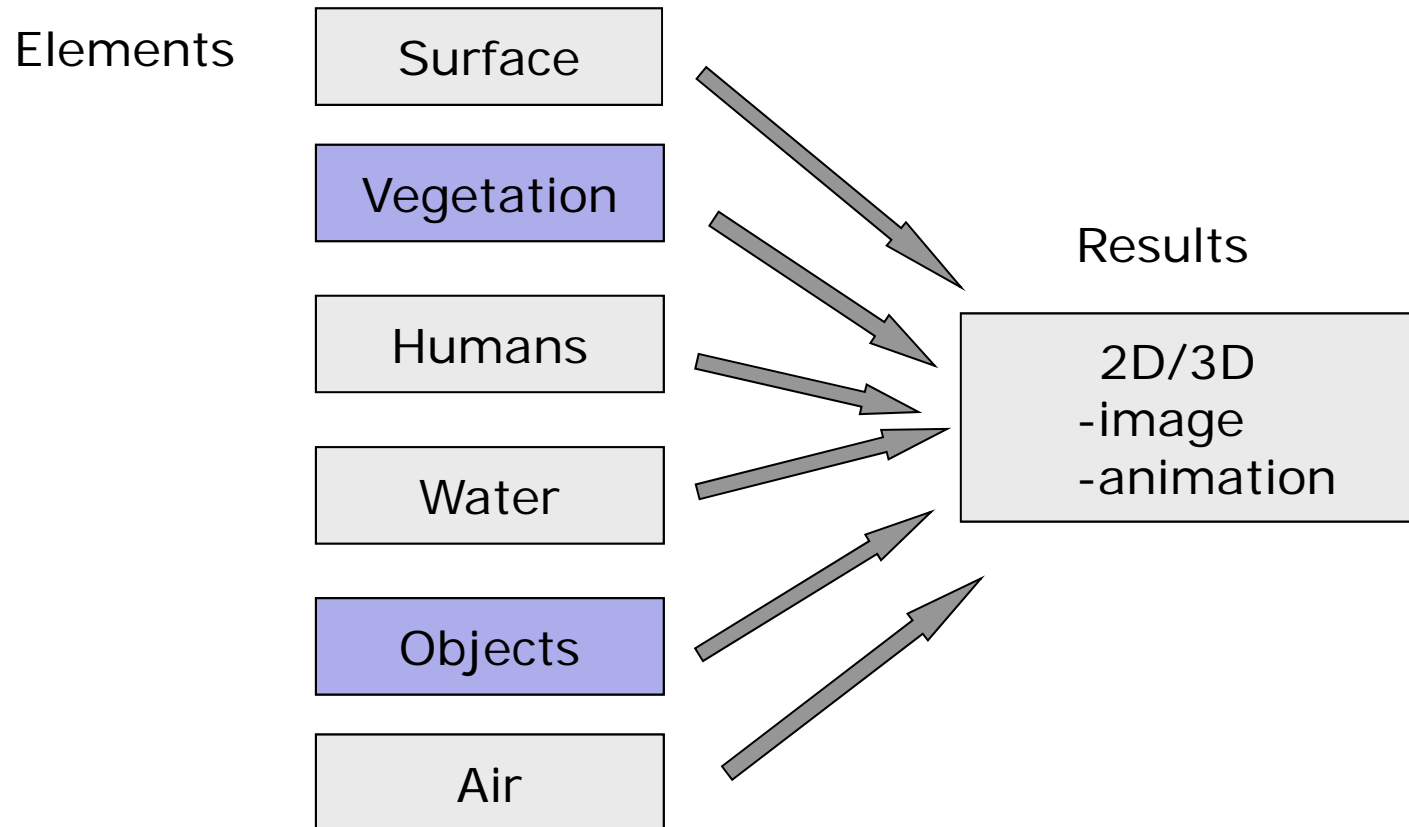


# Type of static and dynamic models (the dimensions)



- Static model is a still image (no changes on time scale)
- Dynamic models are changing over the time (animation, user interaction etc.)

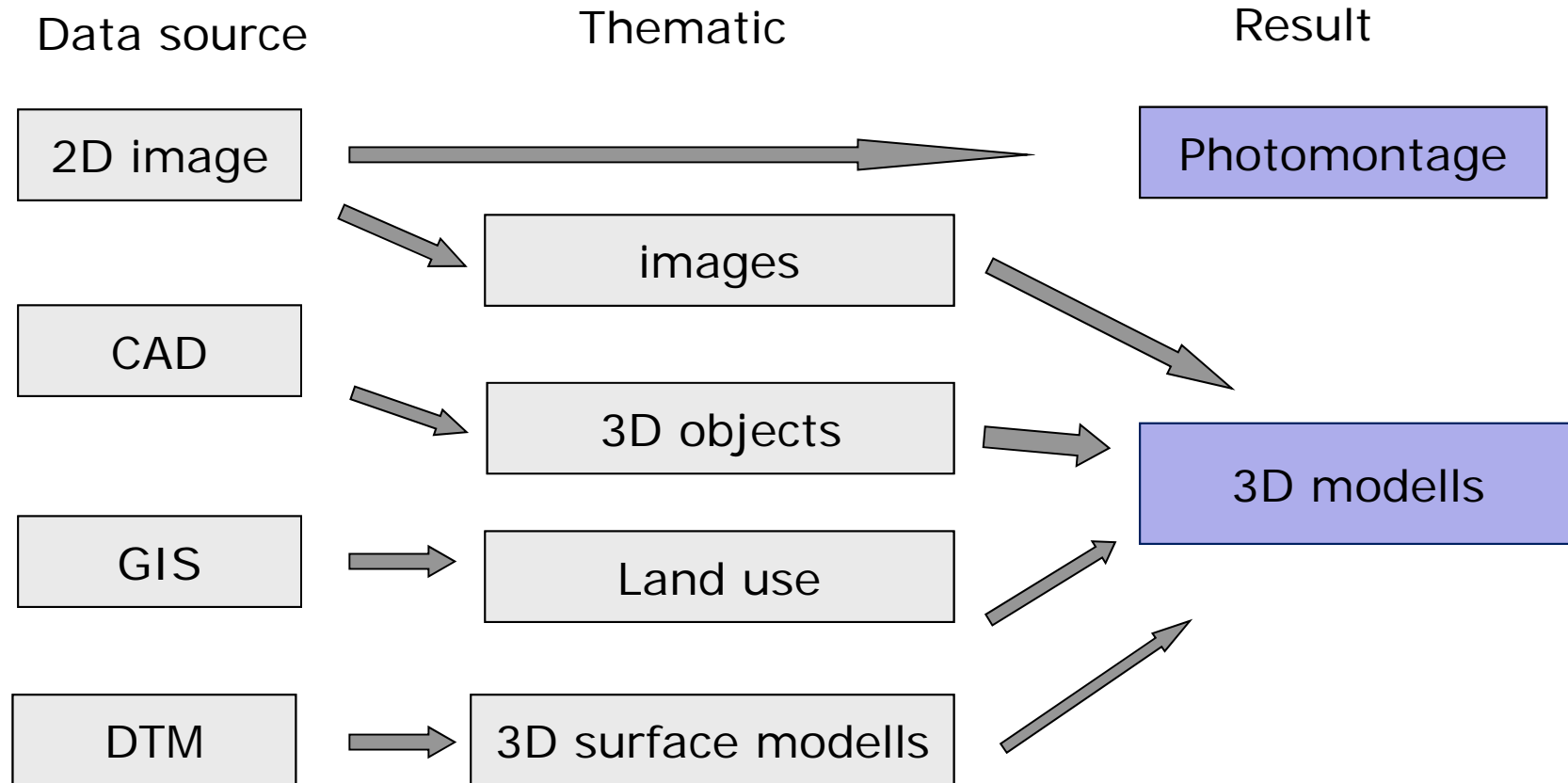
# What we need to model in the landscape?



Some aspect:

- small area /large area /landscape level
- CAD, GIS, Graphic Design softwares
- level of details (schematic representation / detailed photorealistic view)

# Data sources of landscape models



# 3D Nature <http://3dnature.com/>

3D Nature – the realtime landscape visualisation

- Standalone software
- Photorealistic visualisation
- Modells can be exported and into a free client software or to GoogleEarth
- Animated objects in the modell (flowing water, moving sky etc.)

**3D Nature, LLC • 3D Landscape Design & Visualization Software**

• Web store down. [Contact us](#) to order.

• [3D Nature Academy Training Material CD](#)

• [VNS 3](#) and [VNS 3 Demo](#) available!

Click on any image to see how professionals are utilizing 3D Nature's tools!

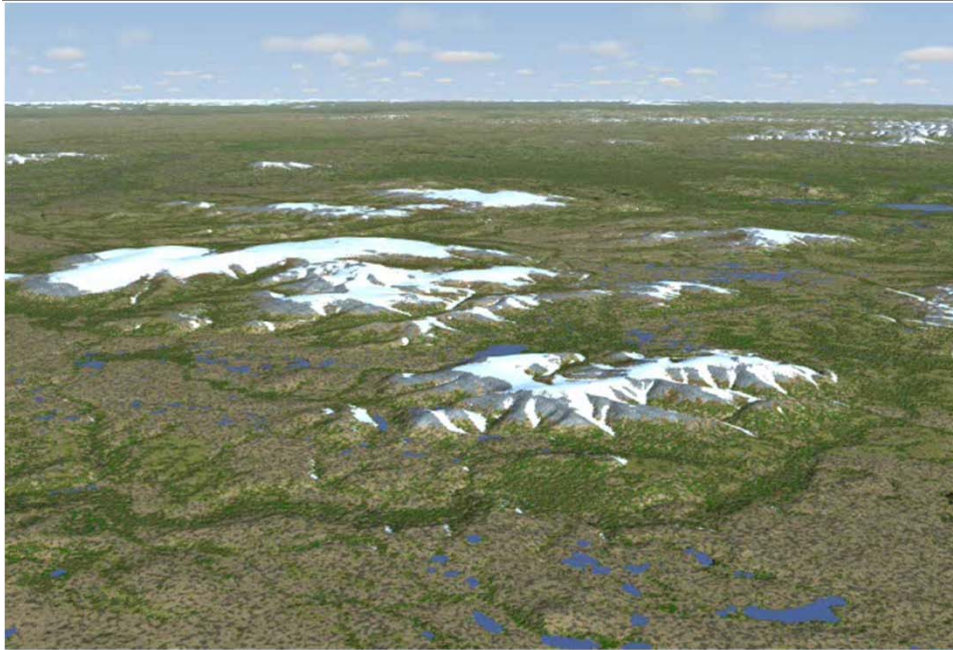
**Navigation Menu:**

- Home
- Search
- Help & Support
- Who are we?
- Why Buy 3DN?
- Brochure Request
- Products**
  - Animation Gallery
  - Product Comparison
  - WCS 6
  - VNS 3
  - Scene Express 2
  - NatureView
  - Forestry Edition
  - NLCD Data Set
  - Ultimate Earth
  - Foliage CD
  - Sketchup Component
  - Global Mapper
  - Directory Opus
  - Services
- 3DN World**
  - Image Gallery
  - Gallery By Field
  - Featured Artist
  - Tutorials
  - Components
  - Classified Ads
  - Research Papers
- Download**
  - Demo Versions
  - Tutorial Videos
  - SRTMFill Tool
  - Free Wallpaper
  - Updates
  - Register Online

**Visualizations:**

- Land Planning
- Golf Course Design
- Forestry & Natural Resource
- Realtime Visualization
- Civil Engineering
- Landscape Architecture
- Historical Recreation
- Cartography





Animation

Proposed mining site  
visualisation

Proposed windmills  
visualisation

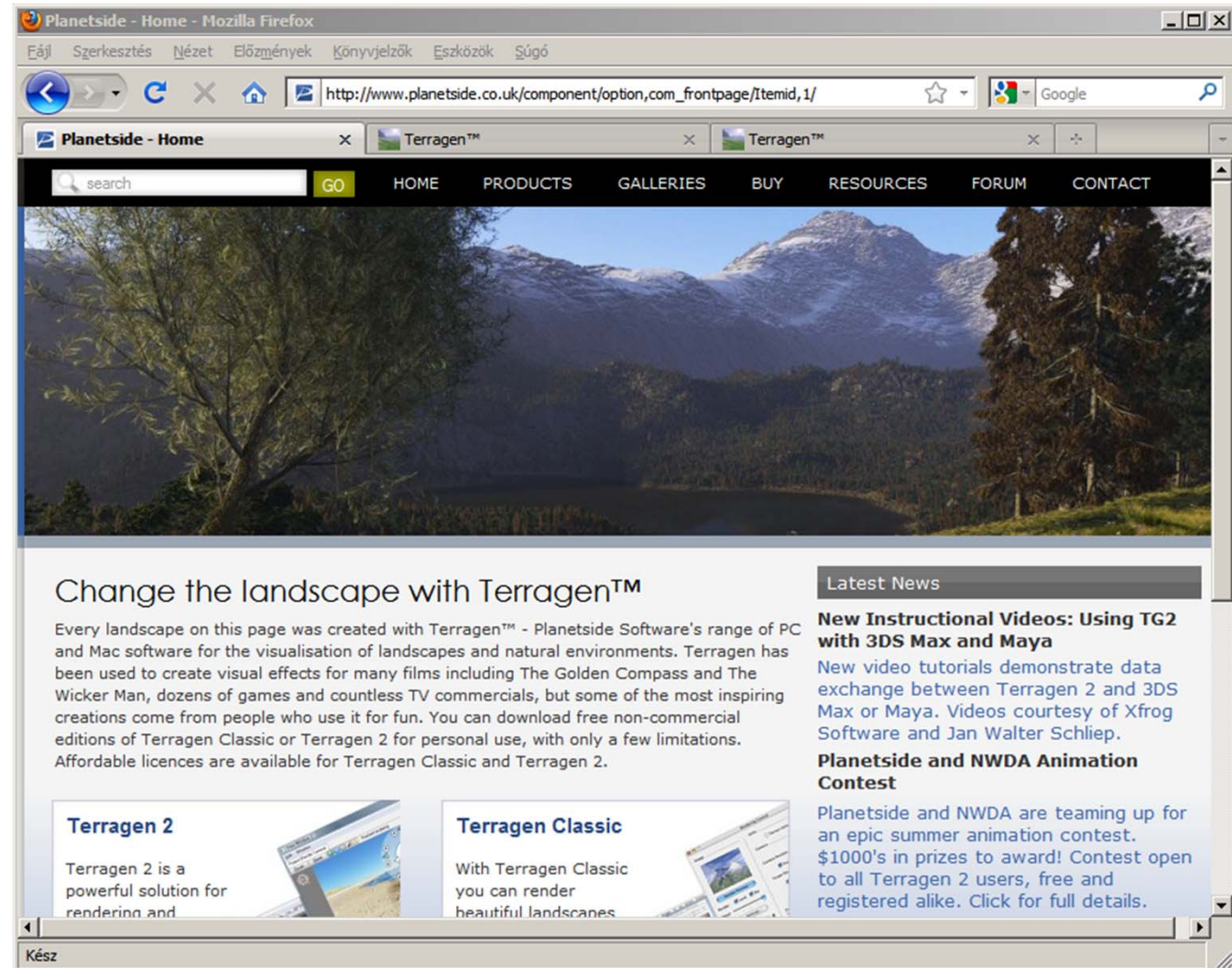




# Terragen2 – The landscape generator (www.planetside.co.uk)

The fantasy landscape generator ...

- Standalone software
- Very high photorealistic images
- Not really for real landscapes (world builder type landscape generators)



## Terragen2 – The landscape generator ([www.planetside.co.uk](http://www.planetside.co.uk))

- Standalone
- Very high photorealistic images
- No online version
- Slow rendering

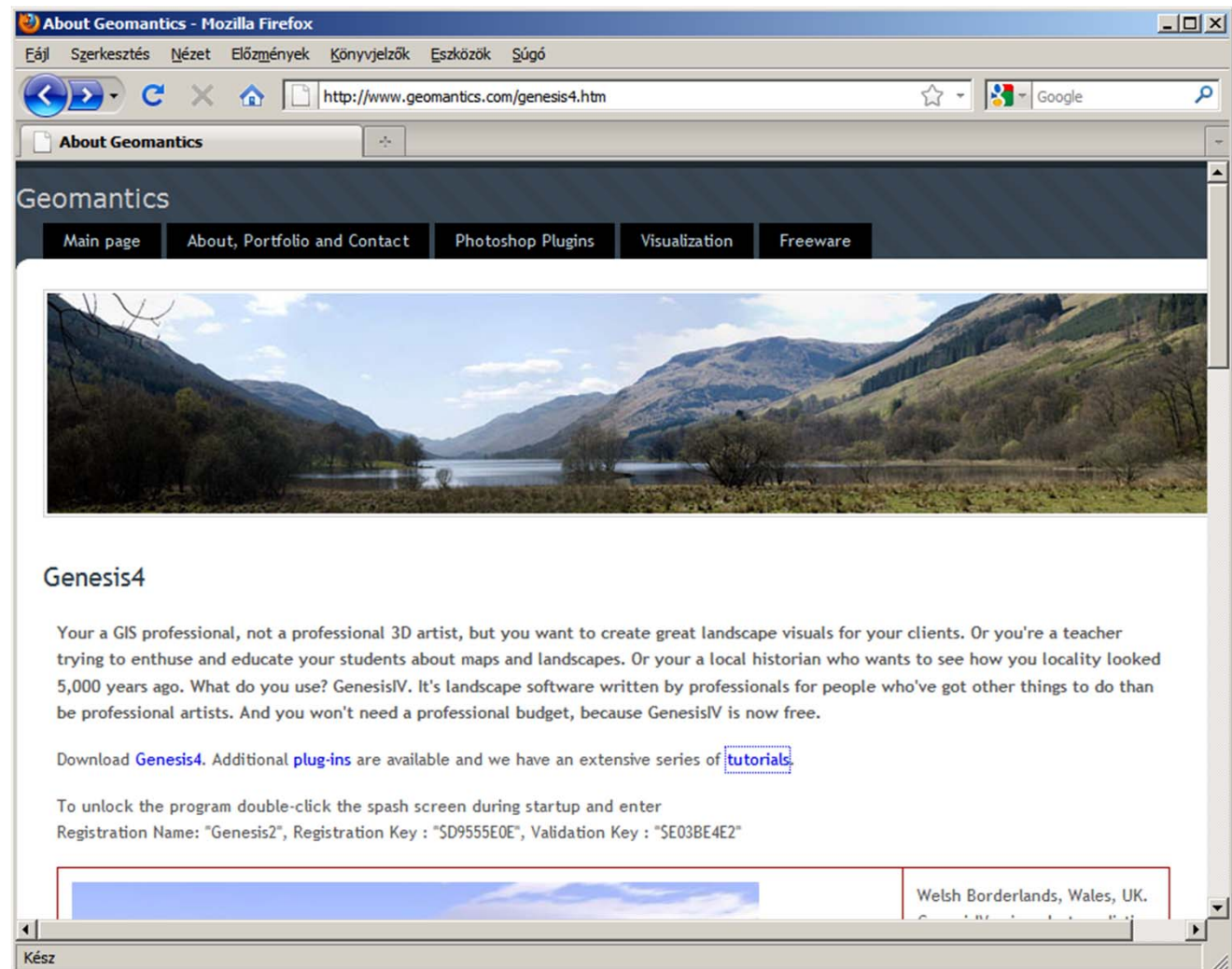




# Genesis IV. - www.geomantics.com

GenesisIV understands GIS concepts like layers, shape objects and georeferencing. It interfaces to industry standard GIS systems such as MapInfo and ArcView

- Free software
- Standalone
- Good GIS link
- Not online



## Genesis IV. - [www.geomantics.com](http://www.geomantics.com)

Mapinfo data input  
visualisation

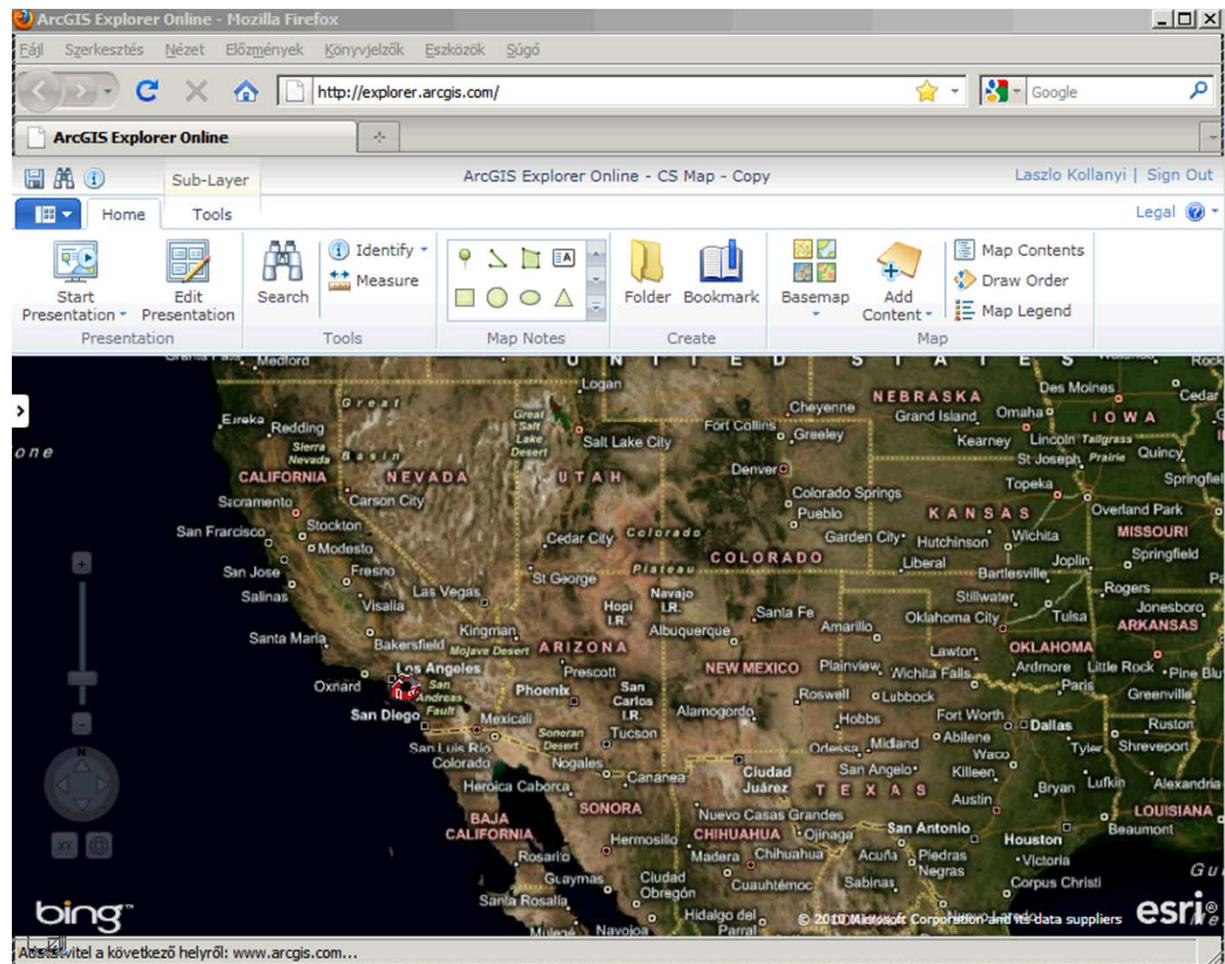
Before/after landscapes





# ArcGIS Explorer ONLINE (!) <http://explorer.arcgis.com/>

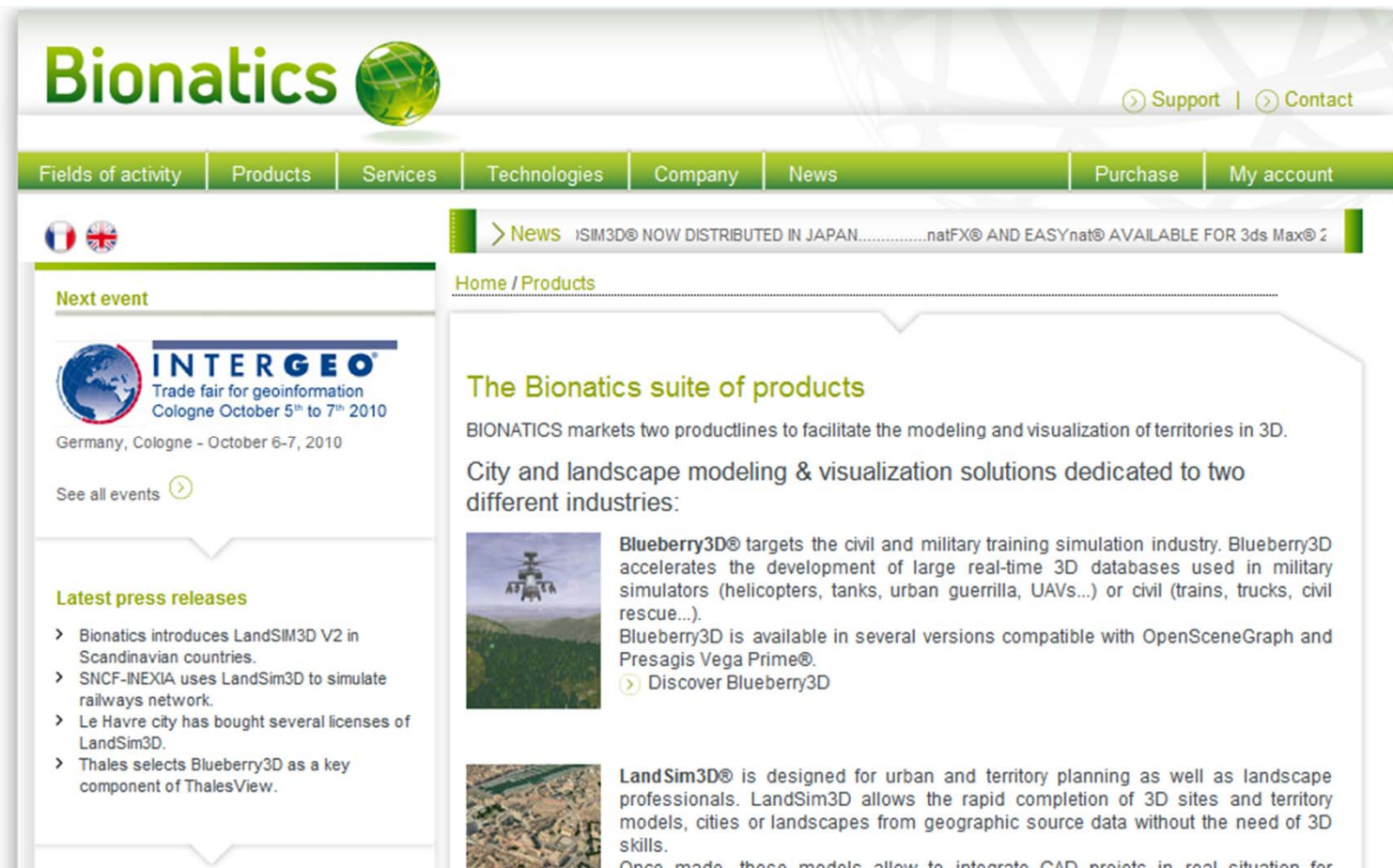
- Online
- Good mapping and editing capabilities comments, own maps, share maps
- Flexible developing possibilities
- Simply to use
- No local data, ESRI webserver is needed to set up.
- All available public data can easily integrate
- Free Bing maps 2D only, unlike GoogleEarth



<http://www.bionatics.com>

## LandSim3D – the realtime landscape visualisation

LandSim3D bridges the gap between 2D and 3D allowing the user to automatically convert GIS and cartographic data into a rich, detailed and interactive 3D model.



The screenshot displays the Bionatics website with a green and white color scheme. The header features the Bionatics logo and a globe icon, with links for Support and Contact. A navigation bar includes Fields of activity, Products, Services, Technologies, Company, News, Purchase, and My account. The main content area is divided into several sections:

- Next event:** Promotes the INTERGEO Trade fair for geoinformation in Cologne, Germany, from October 5th to 7th, 2010.
- Latest press releases:** A list of recent news items, including the introduction of LandSIM3D V2 in Scandinavian countries, SNCF-INEXIA's use of LandSim3D for railway simulation, and Thales' selection of Blueberry3D for its ThalesView system.
- The Bionatics suite of products:** A section highlighting two main product lines: Blueberry3D and LandSim3D. Blueberry3D is described as a real-time 3D database for military and civil simulation, while LandSim3D is a tool for urban and territory planning.

The website also features a news banner at the top right announcing the distribution of ISIM3D in Japan and the availability of natFX and EASYnat for 3ds Max.



# LandSim3D

- Standalone application
- Handling large datasets
- Good quality
- Large plant library
- Realtime navigation
- No online version
- Expensive



## LandSim3D Visualize the project alternatives in the existing site

The study of the alternatives of the project is a core function of LandSIM3D.

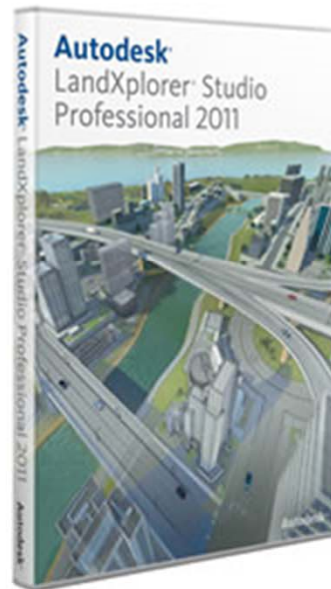


# The former LandXplorer

LandXplorer software to allow the creation of 3D city models that combine GIS functions with photorealistic graphics. The software developer 3D Geo GmbH, a spin-off of the Hasso Platter-Institute for system technique (HPI)

## Autodesk LandXplorer Products

### Product Trial



### Create & Distribute Infrastructure Models

Autodesk® LandXplorer® Studio Professional enables infrastructure project teams to create and distribute large-scale digital city and infrastructure models, so stakeholders can better conceptualize and visualize design projects before they are built. Leverage existing software and data investments by aggregating geospatial, civil engineering, CAD, Building Information Modeling (BIM), land information, and utility network data to more accurately visualize infrastructure models in the context of the built and natural environment.

- **Aggregate existing data**—Include data from AutoCAD® Civil 3D® and FBX® and database sources
- **Simulate design scenarios**—Rapidly build representationally accurate, compelling models from imagery, terrain, and geospatial data
- **Visualize data and environments**—Visualize infrastructure projects in a digital city model
- **Presentation-quality video and imagery**—Produce images, videos, and plots of digital city models
- **Optional Autodesk® LandXplorer® Server**—Provides more dynamic visualizations of large-scale 3D city and infrastructure models over the web
- **Free\* downloadable viewers**—Share digital city models with Autodesk® LandXplorer® Xpress Viewer or view and navigate CityGML datasets with Autodesk® LandXplorer® CityGML Viewer, available at [CityGML.org](http://CityGML.org)



# Real 3D application – Virtual Earth

Visualisation online with Microsoft Bing maps

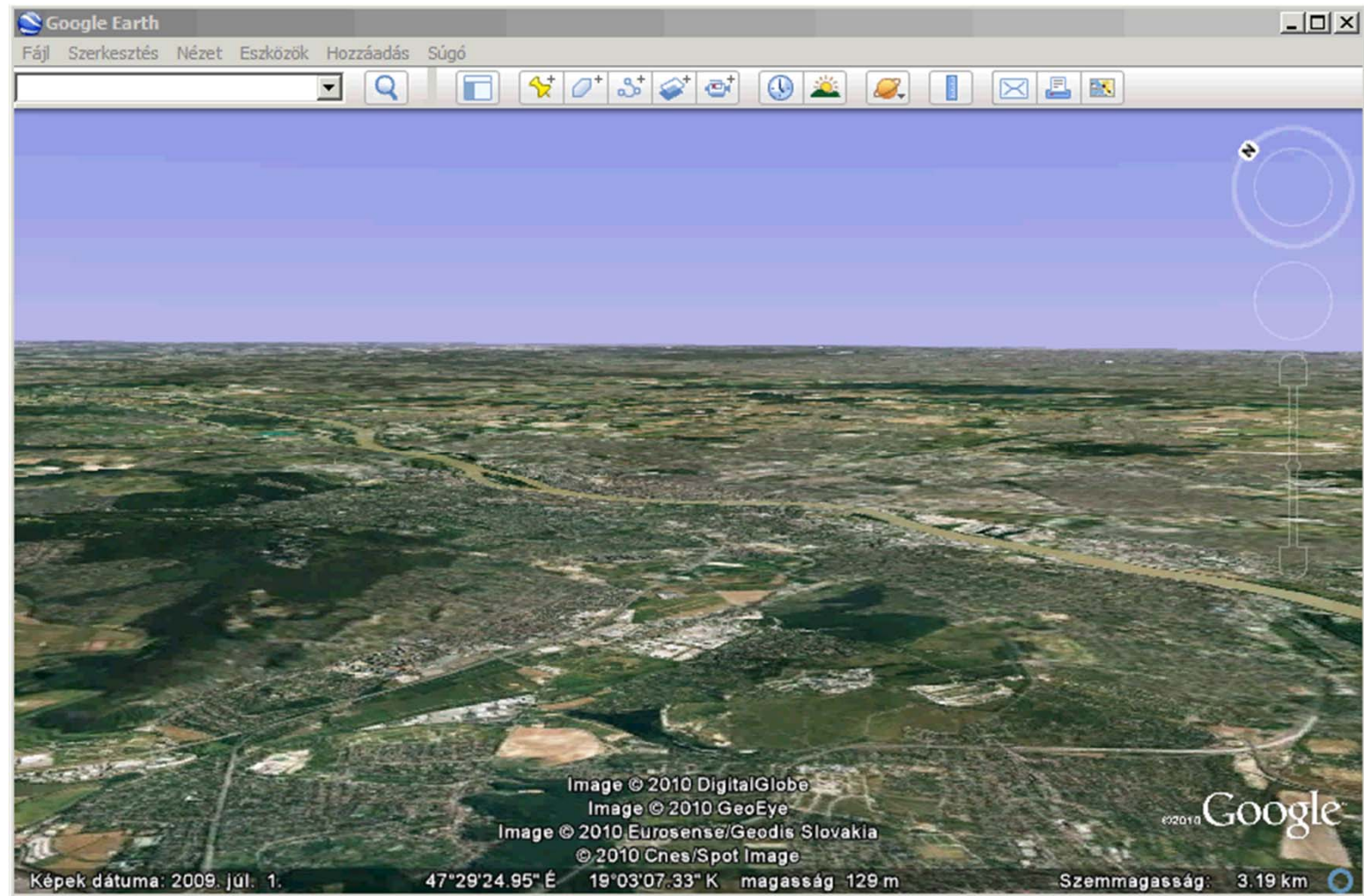
Virtual Earth the Microsoft answer for GoogleEarth

There are development tools to create real 3D applications



# Real 3D application - Google Earth

- Very good developing toolset
- Very quick rendering
- Standardised mashup object (kml)



## Another „aspect”: THE PARTICIPATION...

### WHAT DOES IT MEAN PARTICIPATION ?

- Participation in the planning process
- Alternatives selection
- Voting, selecting alternatives, scenarios
- Commenting details of the plan
- Adding new elements, redrawing existing ones
- Forums and topics creation, interest groups
- Community type portal system for the region

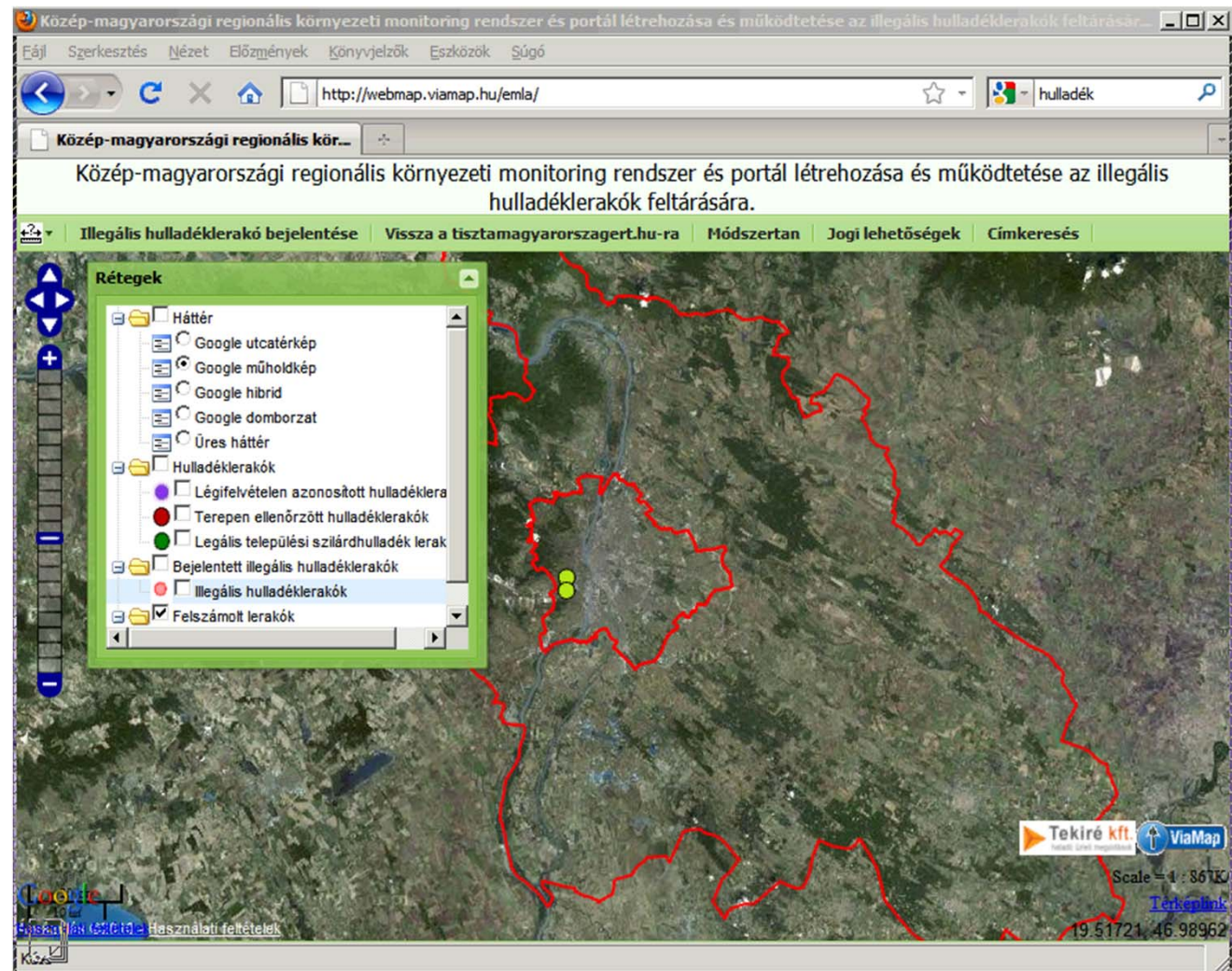


# Good example of public participation ...

## Exploring waste illegal disposal sites

Lets involve local habitants to explore the illegal garbage disposal sites in their neighbourhood

- Online Webmap
- WEB2 techniques

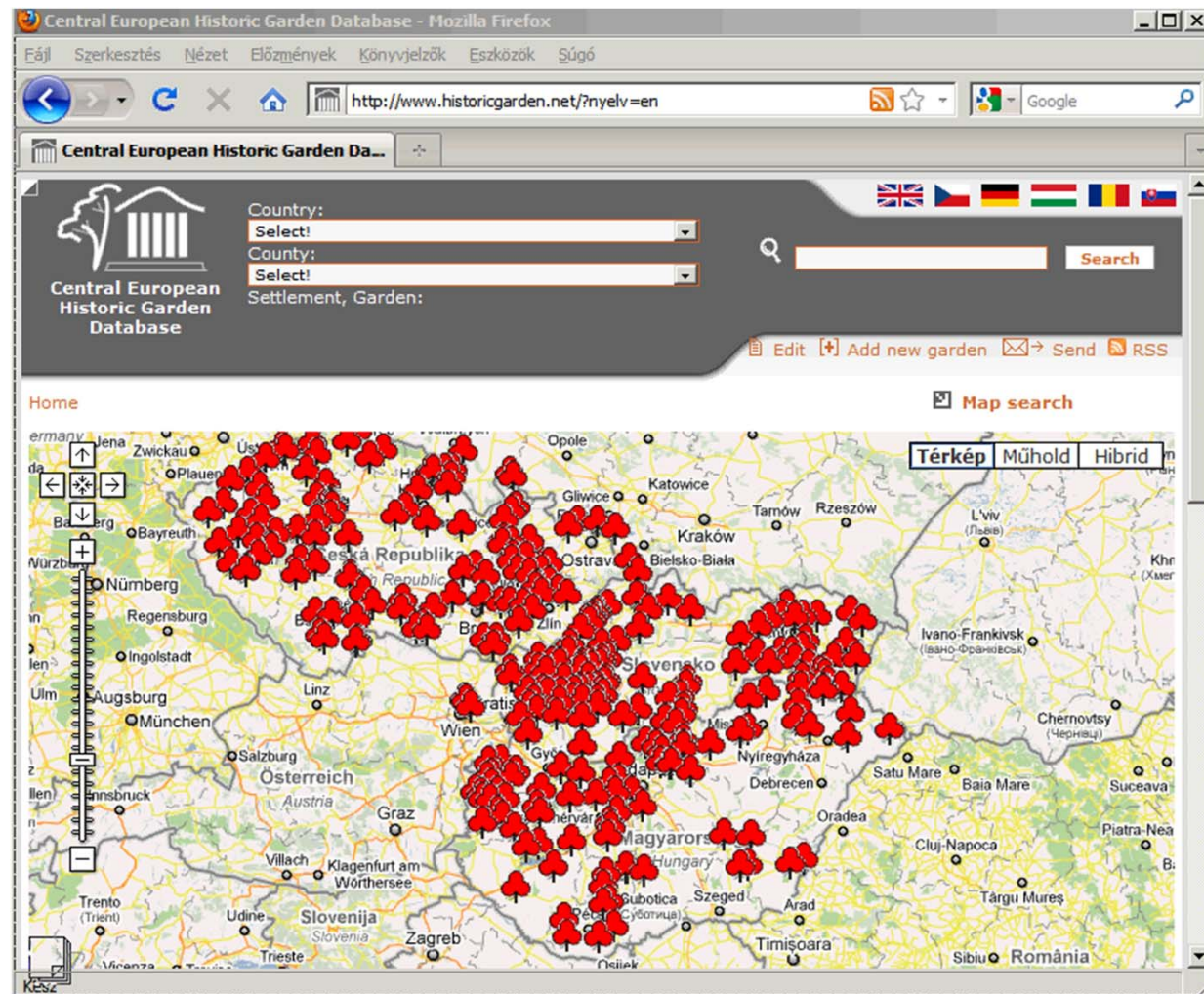


<http://webmap.viamap.hu/emla/>

# Public participation ... (www.historicgarden.net)

Users, local habitats can collect/add information to any historic garden site (images, comments, etc.) or can add new gardens to the list

- Online Webmap
- WEB2 techniques





# Public participation ... (Budapest Agglomeration Plan)

Online Municipal Master Plan on the web

- Users can add comments and graphics to the map

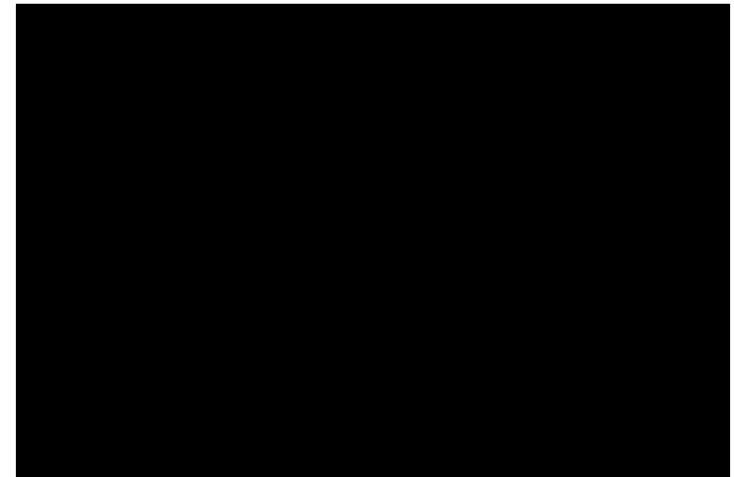


# Future possibility in visualisation - Augmented Reality (AR)

1. combines real and virtual environments
2. is interactive in real time and
3. registers information in three dimensions



Combining real video with  
Google Earth



# Requirements, limitations of visualisation

What we need from this large bunch of possibilities?

Requirements	Benefits/disbenefits
web based	no special software but only Internet connection needed
free viewer for user	no cost on the user side
easy handling	no special knowledge needed, easy to interpret the model
quick rendering	quick visualisation, navigation, no waste of time, the trade off is the quality, quicker animation poorer quality
detailed objects	more photorealistic view, slower data handling
interactivity	user can interact with model, slower rendering, more complex development
large area handling	able to handle large areas (landscapes), the loss is the rendering quality
terrain modelling	real 3D landscape visualisation, more complex model
2D/3D	able to visualise in both environment
objects on the landscape	able to handle real 3D object
time series, scenario, before/after handling	these special functions are important to visualise the proposed/planned landscape changes
accept regular GIS, CAD data	No special format or conversion work is required

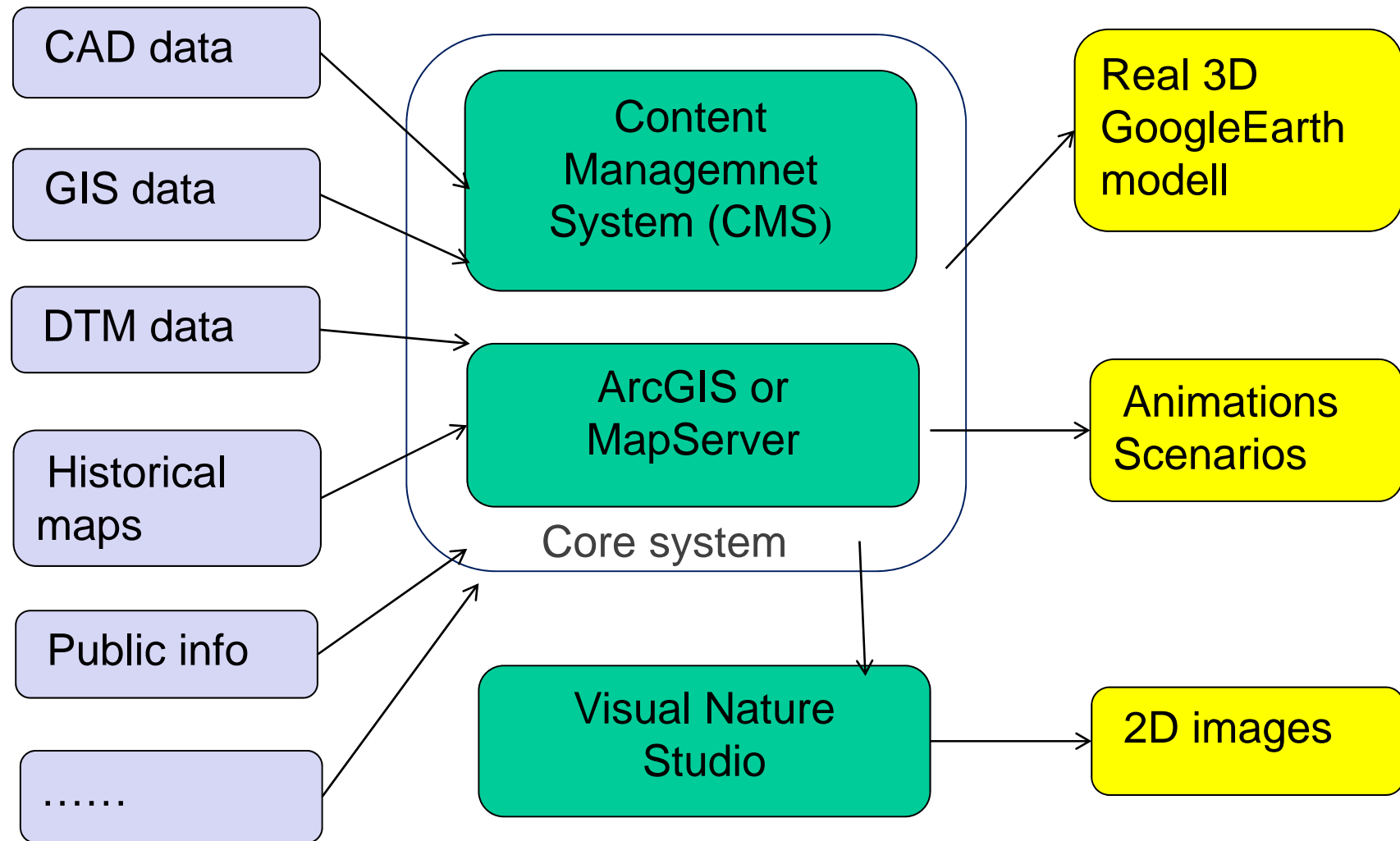
# Software solutions and comparisons

Requirements	VNS	LandSim3D	Terragen	GenesisIV	ArcGIS	Bing	LandeXplore	GoogleEarth
web based	O	O	O	O	X	X	X	X
free viewer for user	X	O/X	O	X	X	X	X	X
easy handling	O	O						X
sophisticated rendering option	X	X	O	O	X	O/X	X	X/O
quick rendering	O/X	X	O	O	O	X	O	X
detailed objects, high quality rendering	X	X	X	X	X	X/O	X	X/O
interactivity	X/O	X/O	O	O	X	X	O/X	X
large area handling	O	X	O	O	X	X	O	X
terrain modelling	X	X	X	X	X/O	X	X	X
2D/3D	X	X	X	X	X/O	X	X	X
objects on the landscape	X	X	X	X	X/O	X	X	X
time series, scenario, before/after handling	X	X	O	O	X	O	X/O	X/O
accept regular GIS, CAD data	X	X	X/O	X/O	X	X	X/O	X



# Structure of the planned visualisation system in Nagyberék

Combination of different tools and data



# Thank you!

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